500AI™

owner's guide

RESPONSIBLE COMPUTER DIVING

- **Always Plan Each Dive**
- **Always Limit Your Dive to the Level of Your Training and Experience**
- **Always Make Your Deepest Dive First**
- **Always Make The Deepest Part of Every Dive First**
- **Check Your Computer Often During the Dive**
- **Do A Safety Stop on Every Dive**
- **Allow Adequate Surface Interval Between Each Dive**
- **Allow Adequate Surface Interval Between Each Day of Diving (12 Hours or Until Your Computer Clears)**

Read And Understand This Owner's Guide Thoroughly <u>Before</u> Using the 500AI.

Pay special attention to items marked with this Warning symbol. ⚠

⚠ **WARNINGS:**

- **The 500AI is intended for use by recreational divers who have successfully completed a nationally recognized course in scuba diving, and diving with enriched nitrogen-oxygen (nitrox) mixtures.**
- **It is intended only for no decompression diving, NOT intentional decompression diving.**
- **It must not be used by untrained persons who may not have knowledge of the potential risks and hazards of scuba diving, and diving with enriched nitrogen-oxygen (nitrox) mixtures.**
- **You must obtain scuba certification, and certification in diving with enriched nitrogen-oxygen mixtures (nitrox) before using the 500AI if you have not already done so.**
- **It is NOT for use by military and commercial divers.**
- **It should NOT be utilized for any competitive, or repetitive square wave or decompression diving, as it is intended solely for recreational use and no decompression multilevel diving.**
- **As with all underwater life support equipment, improper use or misuse of this product can cause serious injury or death.**
- **Never participate in sharing or swapping of a dive computer.**
- **Conduct your dives in such a manner so as to insure that you continuously check the computer's proper function.**
- **Read and understand this owner's guide completely before diving with the 500AI.**
- **If you do not fully understand how to use this dive computer, or if you have any questions, you should seek instruction in its use from your authorized AERIS dealer before you utilize this product.**

LIMITED TWO-YEAR WARRANTY
For details, refer to the Product Warranty Registration Card provided.

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PATENT NOTICE
U.S. Patents have been issued, or applied for, to protect the following design features:
Dive Time Remaining (U.S. Patent no. 4,586,136), Data Sensing and Processing Device (U.S. Patent no. 4,882,678), and Ascent Rate Indicator (U.S. Patent no. 5,156,055).

DECOMPRESSION MODEL
The programs within the 500AI simulate the absorption of nitrogen into the body by using a mathematical model. This model is merely a way to apply a limited set of data to a large range of experiences. The 500AI dive computer model is based upon the latest research and experiments in decompression theory. **Still, using the 500AI, just as using the U.S. Navy (or other) No Decompression Tables, is no guarantee of avoiding decompression sickness, i.e. "the bends."** Every diver's physiology is different, and can even vary from day to day. No machine can predict how your body will react to a particular dive profile.

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FEATURES and DISPLAYS

INTRODUCTION

Welcome to AERIS and thank you for choosing the 500AI!

Your new 500AI is an integrated system that will be installed into a high pressure port of your regulator first stage.

Your 500AI presents the information that you need before, during, and after your air (or nitrox) dives using an intuitive combination of easy to read displays and unique identification icons. Tissue loading of nitrogen, accumulation of oxygen, and ascent rate are presented as segmented bar graphs beside color coded reference indicators that bring quick focus to these important status displays. In addition, tank pressure is displayed in graphic and numerical formats on the screen.

As you progress through this instructional guide, you will become familiar with all of the unique functions and features available and see examples of the displays that you could expect to see in the various operational modes. Refer to the Glossary of terms in the back of this manual, and keep the waterproof Review Card handy during your dive trips. Although it will require an initial investment of time to become acquainted with the various icons and bar graphs, you'll soon agree that the 500AI is easy to understand and use.

Be a -
RESPONSIBLE DIVER
at all times.

Remember that the rules you learned in your basic scuba certification course still apply to the diving you will do while using a dive computer - some will become even more important. Technology is no substitute for common sense, and a dive computer only provides the person using it with data, not the knowledge to use it.

NOTE: Throughout this owner's guide reference is made to the term 'breathing gas'. The rational being that the 500AI can be used for 'air' dives or 'nitrox' dives. For clarity these terms are defined as -

Breathing Gas - the gaseous mixture breathed during a dive.
Air - a breathing gas that contains approximately 21% oxygen and 79% nitrogen (nature's common nitrogen-oxygen mixture).
Nitrox - a nitrogen-oxygen breathing gas that contains a higher fraction of oxygen (22 to 50%) than air.

CONTROL BUTTONS

The 500AI is a unique dive computer with interactive controls that allow you to select various display options and access specific information when you choose to see it. The **Advance** (Left) and **Select** (Right) control buttons (Fig. 1) can be pressed repeatedly, or held in to scroll as you define settings or access different display modes.

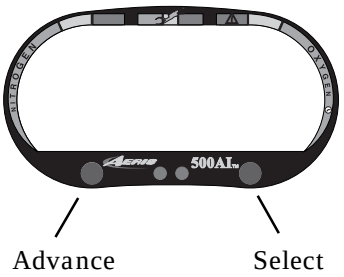


Fig. 1 - Control Buttons

While on the surface, you can access the following Modes and perform the following operations using the control buttons:

- Activate the Display Module
- Activate the Backlight
- View current Temperature, Time, and Date
- Set FO2 to the percentage of oxygen in the nitrox mix being used.
- View Time to Fly and Time to Desaturate
- Scroll through the Plan mode to view no decompression limits.
- Scroll through Log mode to view data from your recent dives.
- Turn the FO2 50% Default on or off.
- Turn the Audible Alarm on or off.
- Select the Depth Alarm.
- Select the Turn Gas Pressure Alarm.
- Select the End Gas Pressure Alarm.
- Select Units of Measure (English or Metric values) to be viewed.
- Initiate Download of data to a PC program.
- Set the Date, Time Format, and Time.
- Select the Sampling Rate for data to be downloaded.

During Dive modes, the Select (Right) button can be used to activate the display's backlight, and the Advance (Left) button can be used to access an Alternate display that provides additional information for the dive.

INFORMATIONAL DISPLAYS

Operational modes and status information is visually represented numerically and/or graphically and can be understood at a glance with the aide of Universal Icons (Fig. 2) that identify and bring quick focus to the displays. Also, segmented bar graphs will show how close you are to critical limits. In critical situations, an audible alarm sounds to alert you to check your display.

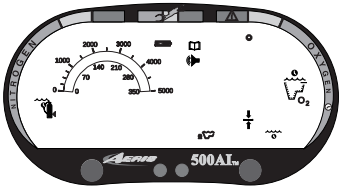


Fig. 2 - Universal Icons

Each numeric and graphic display represents a unique piece of information. It is imperative that you understand the formats, ranges, and values of the information represented to avoid any possible misunderstanding that could result in error.

BAR GRAPHS

There are four segmented bar graphs that appear on the screen (Fig. 3). The three around the perimeter are located next to green, yellow, and red color coded portions of the peripheral decal which denote normal, caution, and danger zones, respectively. When underwater, you can quickly focus on the bar graphs to make sure that they are **in the green**. You can quickly verify that you're not getting too close to the no decompression limit or the oxygen tolerance limit, or ascending too fast, or running low on breathing gas.

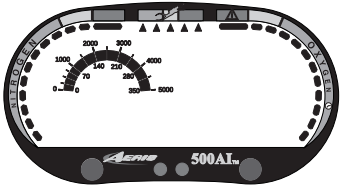


Fig. 3 - Bar Graphs

Nitrogen Bar Graph

The Nitrogen Bar Graph (Fig. 4) represents nitrogen loading, showing your relative no decompression/decompression status. As your depth and elapsed dive time increase, segments will add to the graph beginning in the lower left portion of the screen. As you ascend to shallower depths, this bar graph will begin to recede, indicating that additional no decompression time is allowed for multilevel diving.

The Nitrogen Bar Graph monitors 12 different nitrogen compartments simultaneously and displays the one that is in control of your dive at that time. It is divided into a green No Decompression zone, a yellow Caution zone (no decompression), and a red Decompression zone. The yellow Caution Zone (Fig. 4a) provides a visual representation of how close you are to the no decompression limit, allowing you to make a decision regarding safety stop duration or necessity. While you cannot provide a guarantee against the occurrence of decompression sickness, you may choose your own personal zone of caution based upon age, physique, excessive weight, etc., to reduce the statistical risk.

The Nitrogen Bar Graph also assists you with managing decompression by filling a large red 'ceiling stop required' segment (Fig. 4b).

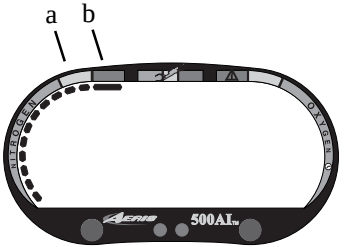


Fig. 4 - Nitrogen Bar Graph

WARNING: AERIS advocates responsible diving practices consistent with your individual level of formal training and experience, and does not recommend decompression diving or diving below 130 feet (39 m).

Oxygen Accumulation (O2) Bar Graph

NOTE: Displays associated with oxygen and the O2 bar graph will only appear if FO2 has been set at a value other than 'Air'.

The Oxygen Accumulation (O2) Bar Graph (Fig. 5) represents oxygen loading, your relative oxygen tolerance dosage (OTU), showing the maximum of either per dive allowable oxygen, or 24 hour period allowable oxygen. As your exposure (accumulation of oxygen) increases during the dive, segments will add to the bar graph starting in the lower right portion of the screen. As oxygen loading decreases, the bar graph will begin to recede, indicating that additional exposure (accumulation) is allowed for that dive, and that 24 hour period.

The O2 Bar Graph also assists you with managing high partial pressure of oxygen (PO2) by flashing the large red Danger zone segment (Fig. 5a) as a warning when the level of PO2 exceeds the maximum allowed limit of 1.60 ATA . This is explained in detail later in the Handling the Extremes section.

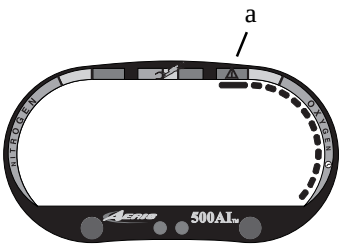


Fig. 5 - Oxygen (O2) Bar Graph

ARI Segments = Ascent Speed
0 = 0 - 20 fpm (0 - 6 mpm)
1 = 21 - 30 fpm (6.5 - 9 mpm)
2 = 31 - 40 fpm (9.5 - 12 mpm)
3 = 41 - 50 fpm (12.5 - 15 mpm)
4 = 51 - 60 fpm (15.5 - 18 mpm)
5 = 61 + fpm (18.5 + mpm)
(when 5, all segments will flash)

Pressure BG Segments =

- 250 PSI (17.5 BAR) - when below 1000 PSI (70 BAR)
- 500 PSI (35 BAR) - when above 1000 PSI (70 BAR)

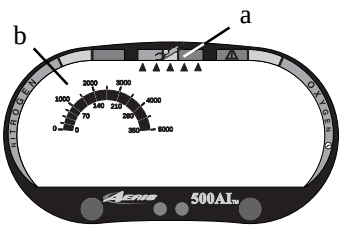


Fig. 6 - Ascent Rate Indicator and Tank Pressure Bar Graph

Ascent Rate Indicator

The Ascent Rate Indicator (Fig. 6a) is provided to help you avoid excessive ascent rates by providing a visual representation of ascent speed, rather than just showing that you are ascending too fast.

The 5 triangular segments of the bar graph, located beside green, yellow, and red reference zones, appear beginning from the left and may be considered an ascent rate speedometer. Green is a 'normal' rate, yellow is a 'caution' rate, and red is 'Too Fast'. The actual speeds that the segments represent are shown at the left.

When your ascent rate exceeds the maximum recommended rate of 60 feet (18 meters) per minute, the bar graph segments will enter the red zone and all displayed segments will flash once per second until your ascent speed is slowed. When this occurs, you should immediately slow your ascent.

The Ascent Rate Indicator has been granted U.S. Patent No. 5,156,055.

Tank Pressure Bar Graph

Segments of the Tank Pressure Bar Graph(Fig. 6b) appear on the display when the 500AI is connected to a pressurized cylinder and in the Surface Mode or Dive Mode. The value of segments is shown at the left.

ALPHA/NUMERIC DISPLAYS

Tank Pressure Display

While on the surface, tank pressure will also be displayed numerically below the bar graph (Fig. 7).

During a dive, the numerical value can be viewed as an Alternate Display by pressing the Advance (Left) control button.

Values of pressure are displayed from 10 PSI (.5 BAR) up to 5000 PSI (350 BAR) in increments of 10 PSI (.5 BAR).

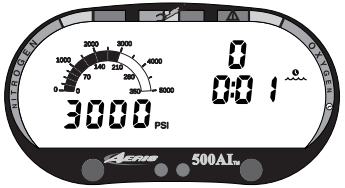


Fig. 7 - Tank Pressure

Depth Displays

During a dive, the **Current Depth** (Fig. 8a) and the **Maximum Depth** reached during that dive (Fig. 8b) are displayed from 0 to 330 feet (99.5 meters) in 1 foot (.5 meter) increments.

During a Decompression Dive, the required **Ceiling Stop Depth** is displayed in place of Maximum Depth. Stop Depths from 60 up to 10 feet (20 to 3 meters) are shown in 10 foot (3 meter) increments.

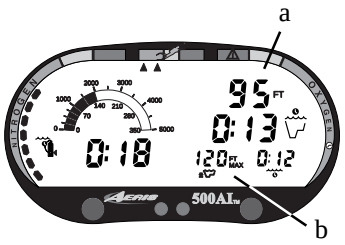


Fig. 8 - Depth Displays

Fig. 9 - Time Displays

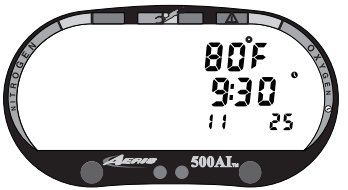


Fig. 10 - Temperature (on surface)

Time Displays

Time displays (Fig. 9 a, b, & c) are shown in hour:minute format (i.e. 1:02 represents one hour and two minutes, not 102 minutes!).

The colon that separates hours and minutes blinks once per second when the display is indicating real time such as elapsed Surface Time, Elapsed Dive Time, or Time of Day.

Dive Time Available, Dive Time Remaining, Decompression Stop Time, Total Ascent Time required, Time to Fly, or Desaturation Time are calculated projections of time and use a solid (non-blinking) colon to indicate that they are counting down, rather than counting up.

Temperature Display

Ambient Temperatures from 0° to 99°F (-9° to 60°C) are displayed together with Time of Day and Date when the Advance (Left) button is pressed while in the Surface Mode (Fig. 10) or a dive mode.

NOTE: The alpha/numeric displays will be illustrated and described in more detail as applicable for the various operating modes described throughout this owner's guide.

DIVE TIME REMAINING

One of the most important pieces of information on the 500AI is the patented Dive Time Remaining numeric display (Fig. 11a). To numerically display Dive Time Remaining, the 500AI constantly monitors two critical pieces of information; no decompression status and oxygen accumulation status.

The Dive Time Remaining display will indicate the time that is more critical for you at that particular moment (i.e.; whichever time is the least amount available of the two).

This unique feature has been granted U.S. Patent No. 4,586,136.

The specific time being displayed is identified by the No Decompression Dive Time icon or the Oxygen Accumulation Time icon displayed to the right of the numeric display.

Simultaneously, Breathing Gas Time Remaining (Fig. 11b) and its identifying icon are displayed below the Tank Pressure Bar Graph.

Fig. 11 - Dive Time Remaining (No Deco)

No Decompression Dive Time Remaining

No Decompression Dive Time Remaining is the maximum amount of time that you can stay at your present depth before entering a decompression situation. It is calculated based on the amount of nitrogen absorbed by twelve hypothetical tissue compartments. The rates each of these compartments absorb and release nitrogen is mathematically modeled and compared against a maximum allowable nitrogen level. Whichever one of the twelve is closest to this maximum level is the controlling compartment for that depth. Its resulting value will be displayed numerically (Fig. 12a) along with the No Decompression Dive icon and graphically as the Nitrogen Bar Graph (Fig. 12b).

As you ascend from depth following a dive that has approached the no decompression limit, the Nitrogen Bar Graph will diminish as control shifts to slower compartments. This is a feature of the decompression model that is the basis for multilevel diving, one of the most important advantages the 500AI offers.

The no decompression algorithm is based upon Haldane's theory using maximum allowable nitrogen levels developed by Merrill Spencer. Repetitive diving control is based upon experiments designed and conducted by Dr. Ray Rogers and Dr. Michael Powell in 1987. Diving Science and Technology® (DSAT), a corporate affiliate of PADI®, commissioned these experiments.

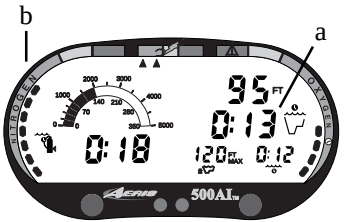


Fig. 12 - No Decompression Dive Time Remaining

Oxygen Accumulation Time Remaining

Oxygen accumulation (exposure) during a dive, or 24 hour period, appears graphically as the O2 Bar Graph (Fig. 13a). As time remaining before reaching the oxygen exposure limit decreases, segments are added to the O2 bar graph. When the amount of time remaining before reaching the oxygen limit becomes less than the No Decompression Dive Time Remaining, calculations for the dive will be controlled by oxygen. Oxygen Time Remaining will then appear as the main numeric time display (Fig. 13b) as signified by the O_2 icon appearing to the right of the display.

As oxygen accumulation continues to increase, the O2 bar graph will enter the yellow Caution Zone. High O2 Mode is explained in detail later in the Handling the Extremes section.

Breathing Gas Time Remaining

The 500AI calculates Breathing Gas Time Remaining using a patented algorithm that is based on a diver's individual breathing gas consumption rate and current depth. Tank pressure is measured once each second, and an average rate of consumption is calculated over a 90 second period. This rate of consumption is then used in conjunction with a knowledge of the depth dependence to predict the breathing gas required for the diver to make a safe controlled ascent including any required decompression stops.

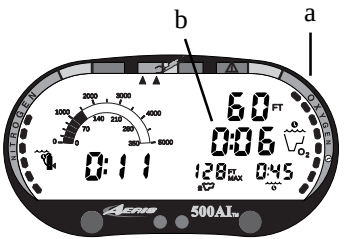


Fig. 13 - O2 Accumulation Time Remaining

Breathing gas consumption and depth are continuously monitored, and Breathing Gas Time Remaining reflects any change in your circumstances. For example, when a buddy starts breathing from your octopus or you suddenly find yourself swimming against a strong current and begin breathing more rapidly, the 500AI will recognize this change and adjust your Breathing Gas Time Remaining accordingly.

Remember, the Breathing Gas Time Remaining is the time you can remain at the present depth and still safely surface with the tank pressure reserve that you select during setup (End Gas Alarm Set Point).

When Gas Time Remaining indicates zero (Fig. 14a), you should immediately initiate a controlled ascent while monitoring your tank pressure (Fig. 14b). However, there is no reason to panic, the 500AI has allowed for the breathing gas necessary for a safe ascent including any emergency decompression stops required.

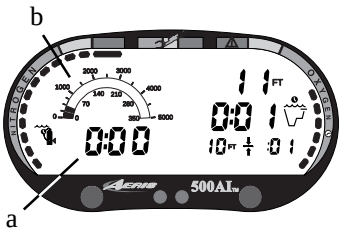


Fig. 14 - Breathing Gas Time Remaining

For example:

- You set the End Gas Alarm for 300 PSI (20 BAR)
- You are at a depth of 60 feet (20 meters)
- Gas Time Remaining decreases to 0:00
- You ascend at a maximum rate of 60 fpm (20 mpm)
- You surface with 300 PSI (20 BAR) pressure remaining in your tank

BACKLIGHT FEATURE

In addition to using a high contrast LCD for easy readability in low light conditions, the 500AI Backlight feature evenly and easily illuminates the full display. Upon activation the Backlight will illuminate the display while the unit performs its diagnostic check.

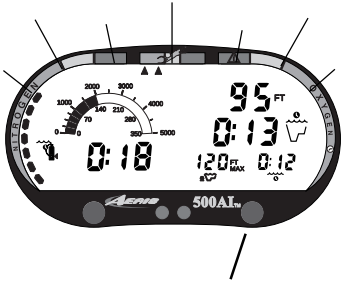


Fig. 15 - Backlight

To activate the Backlight while on the surface or during a dive, press the Select (Right) button (Fig. 15). On the surface the display will be illuminated for 10 seconds. While in a dive mode, the display will remain illuminated as long as the button is depressed, plus 10 seconds after being released. Additional illumination time can be obtained by pressing the button again.

NOTE: Extensive use of the Backlight reduces estimated battery life. Also, the Backlight will not activate during a Low Battery condition or while downloading data to a PC.

AUDIBLE ALARM

One Short Beep = Transition

Emitted after activation and a diagnostic check, prior to Surface Mode.

BEEP!

One Double Beep = Potential Danger

During situations that may pose potential danger, one Double Beep is emitted from the 500AI. These situations include:

- Entry into decompression.
- Breathing Gas Time Remaining decreasing to 5 minutes.
- Partial pressure of oxygen (PO2) equal to or greater than 1.40 ATA.

Continuous One Beep per Second = Immediate Danger

When the 500AI senses immediate danger to you, it emits One Beep per Second until the situation is corrected, if the Audible Alarm feature is set ON (described later). If the Audible Alarm feature is set OFF, you will be alerted instead by one Double Beep. Immediate Danger situations include:

- Ascending to a depth shallower than a Required Stop Depth.
- Upon surfacing, if shallower than a Required Stop Depth for less than 5 minutes.
- Partial pressure of oxygen (PO2) equal to or greater than 1.60 ATA.
- Ascending at a rate that exceeds 60 fpm (18 mpm).
- Descending deeper than the Depth Alarm Set Point.
- Gas Time Remaining equals zero (0:00).
- Oxygen accumulation greater than the allowed per dive or 24 hour limit.

Single Long Beep = Permanent Violation

If you enter a Delayed or Immediate Violation Mode, a Single Long Beep will be emitted. This will occur if one of these Violation rules are broken:

BEEEEEEEP!

- Depth is shallower than the Required Stop Depth for more than 5 minutes.
- 5 minutes after surfacing if shallower than a Required Stop Depth.
- Required Stop Depth equal to or greater than 70 FT/ 21 M.
- 5 minutes after surfacing from a dive in which a Delayed Violation occurred (described later).

Six Beeps = Breathing Gas Alarm

This will occur when Tank Pressure decreases to the Turn Gas Alarm set point that you select during setup.

BEEP...
BEEP...
BEEP...
BEEP...
BEEP...
BEEP...

OPERATING TEMPERATURE

The 500AI will operate in almost any temperature diving environment in the world (Fig. 16) between 32° and 140°F (0° and 60°C).

At extremely low temperatures, the LCD may become sluggish, but this will not affect it's accuracy. If stored or transported in extremely low temperature areas (below freezing), you should warm the module and its battery with body heat before diving.

Even though the 500AI will operate in this wide range of temperatures, **it is possible to damage the electronics if left exposed to direct sunlight, or in a hot confined space (like a car trunk).** After a dive, cover the 500AI and **keep it out of the sun**.

If inadvertently left in the direct sunlight for a long period, the LCD display may become totally black. If this occurs, immediately immerse the Display Module in water. The display should recover its normal appearance after a few minutes.

NOTE: Damage from excess heat, or cold, is not covered by the 500AI two year limited warranty.

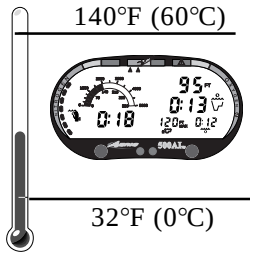


Fig. 16 - Operating Temperature Range

SHARING THE 500AI

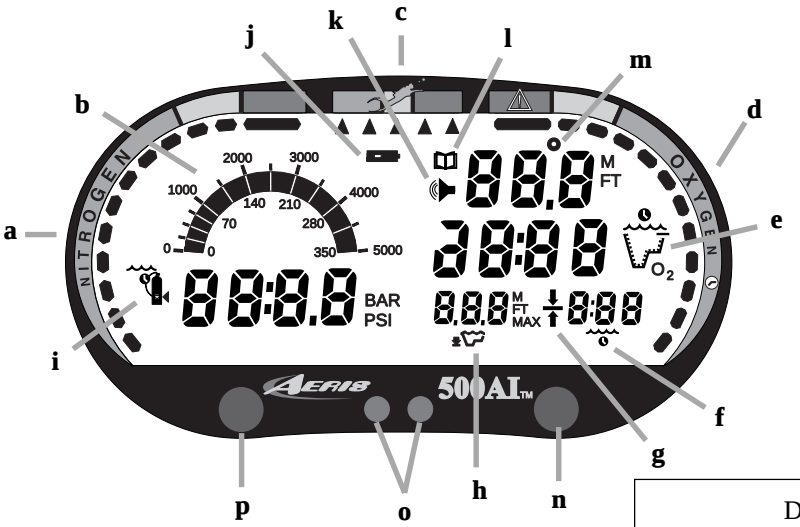
WARNING: Never participate in sharing or swapping of a dive computer. Doing so may result in injury or death.

The 500AI provides information based upon a diver's personal dive profile, and therefore must not be "shared" between divers. You should never, under any circumstances, swap your computer with another unit between dives, or share your computer with another diver underwater.

It is impossible for two divers to stay precisely together underwater, and your computer's dive profile tracking of previous dives will be pertinent to you only. Nitrogen and oxygen loading of a second user may be significantly different and thus swapping dive computers could lead to inaccurate and potentially dangerous predictions of decompression and oxygen accumulation status.

This rule applies to the use of all dive computers, but is especially important when using the 500AI, due to the personal information it provides.

Be a -
RESPONSIBLE DIVER
at all times.



LCD Key

a. Nitrogen Bar Graph
b. Tank Pressure Bar Graph
c. Ascent Rate Indicator
d. Oxygen Loading Bar Graph
e. Icon - Operating Mode (detail A)
f. Icon - Elapsed Dive Time
g. Icon - Deco Stop Ceiling
h. Icon - Maximum Depth
i. Icon - Breathing Gas Time Remaining
j. Icon - Low Battery
k. Icon - Audible Alarm
l. Icon - Log Mode
m. Icon - Temperature
n. Control Button - Select
o. Sensors - Download
p. Control Button - Advance

Detail 'A' - Operating Mode Icons				
Surface	**Plan**	**No Deco**	**Deco**	**O2 Time**

ACTIVATION and SETUP

ATTACHMENT TO A REGULATOR

Before you dive with the 500AI for the first time, it must first be connected to a high pressure port of your regulator first stage. AERIS strongly recommends that installation be performed by an Authorized AERIS Dealer.

NOTE: The 500AI is compatible with most regulator first stages, but cannot be guaranteed to fit certain models. Check with your Authorized AERIS Dealer to verify compatibility with your regulator first stage at the time of purchase.

ACTIVATING THE DISPLAY

Connect the regulator assembly to a full tank and pressurize by slowly opening the tank valve. It is not necessary to pressurize the unit in order to enter settings, access information such as the Log, or to download data to a PC.

WARNING: Never attempt to activate the 500AI underwater. This may result in inaccurate depth and no-decompression time displays. If activated deeper than 4 feet (1 meter) underwater or at elevations higher than 14,000 feet (4,267 meters), the unit will perform a diagnostic test then immediately shut off.

To activate the 500AI -

- **press the Select (Right) button once and release.**

The 500AI will immediately enter Diagnostic Mode, displaying all “8’s”, followed by “dashes”, and then a countdown from 9 to 0 (Fig. 17). The backlight will illuminate the display throughout the diagnostic check as display functions and battery voltage are checked to ensure that everything is working properly. A single beep will be emitted to indicate successful completion.

It will also check the ambient barometric pressure, and calibrate its present depth as zero. At elevations of 2,000 feet (610 meters) or higher, it will recalibrate itself to measure depth in 'feet of fresh water' instead of 'feet of sea water'.

WARNING: If the Low Battery icon appears on display following diagnostics, AERIS strongly recommends that you DO NOT dive until the battery is replaced. See the battery replacement procedure on page 79.

If no dive is made within 2 hours after initial activation, the 500AI will automatically deactivate to conserve its battery power.

Always check the display before entering the water to verify that it is activated and functioning properly.

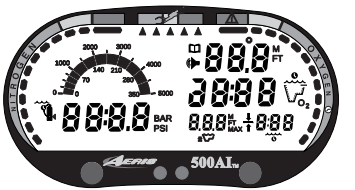


Fig. 17 - Diagnostic Mode

WARNING: During activation, diagnostics, and operation, if any display varies from the information presented here, return the 500AI to your AERIS Dealer for inspection.

SURFACE MODE

Surface Mode, identified by the Surface Time icon (Fig. 18a), immediately follows Diagnostic Mode after initial activation. It also appears after a dive when you ascend shallower than 3 feet (1 meter). Information displayed includes the Dive Number '0' (no dive made yet), Surface Time with flashing colon and icon, and tank Pressure (bar graph and digital display).

ENTERING SETTINGS

- The Advance (Left) button is used to gain access to settings.
- The Select (Right) button is used to toggle between, or scroll through, the individual set points available for each of the settings.
- The Advance (Left) button is then used to accept and save the set point and revert to Surface Mode, or continue to the next setting.
- See page 32 for a summary of Modes and Settings.

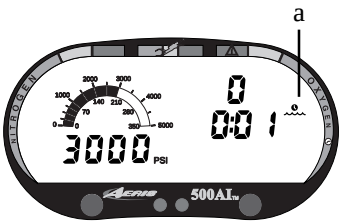


Fig. 18 - Surface Mode

NOTE: While in the Set Mode, if neither button is pressed during a period of two minutes, the 500AI will automatically revert to the Surface Mode.

TO SET: FO2 50% DEFAULT ON/OFF (described on page 35)

'ON' - FO2 value set point reverts to 50% after dives (must be set each dive)
'OFF' - FO2 value set point remains at the % set until changed or shut down

- press BOTH buttons simultaneously, while in Surface Mode
- FO2 50 appears with 'On', or 'Off', flashing (Fig. 19)
- press Select (Right) button to toggle between 'On' and 'Off'
- press Advance (Left) button to accept the setting displayed, and either -
    - revert to Surface Mode (if this setting was changed), or -
    - advance to Set:Audible Alarm (if this setting was not changed)

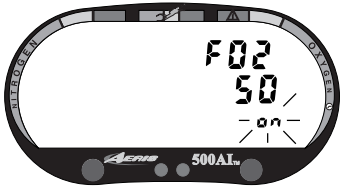


Fig. 19 - Set FO2 Default

TO SET: AUDIBLE ALARM ON/OFF

'ON' - alarms will be sounded for all conditions as listed on pages 15 - 17
'OFF' - alarms are silenced, except for immediate danger (see page 16)

- press BOTH buttons simultaneously, while in Surface Mode
- press Advance (Left) button **1 time**
- the Audible Alarm icon appears with 'On', or 'Off', flashing (Fig. 20)
- press Select (Right) button to toggle between 'On' and 'Off'
- press Advance (Left) button to accept the setting displayed, and either -
    - revert to Surface Mode (if this setting was changed), or -
    - advance to Set:Depth Alarm (if this setting was not changed)

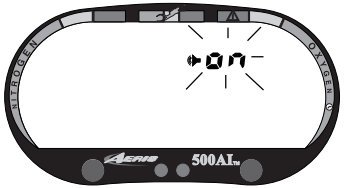


Fig. 20 - Set Audible

TO SET: DEPTH ALARM SET POINT

The Depth Alarm can be set to values between 30 feet (10 meters) and 320 feet (97.5 meters) in 10 foot (3/3.5 meter) increments.

- press BOTH buttons simultaneously, while in Surface Mode
- press Advance (Left) button **2 times**
- Max Depth and Audible Alarm icons appear with the Max Depth value flashing (Fig. 21)
- press Select (Right) button until the desired Depth Alarm value appears
- press Advance (Left) button to accept the setting displayed, and either -
    - revert to Surface Mode (if this setting was changed), or -
    - advance to Set: Turn Pressure Alarm (this setting was not changed)

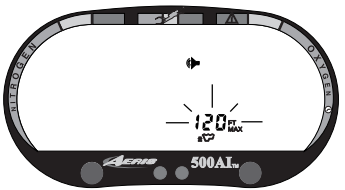


Fig. 21 - Set Depth Alarm

Example of Tank Pressure Alarm Set Points (described on next page)**:**

Starting with 3000 PSI (206.5 BAR) in your tank, set the Turn Pressure Alarm for 2000 PSI (137.5 BAR) and the End Pressure Alarm for 1000 PSI (68.5 BAR). This allows for 1000 PSI (68.5 BAR) going out, 1000 PSI (68.5 BAR) used coming back, and 1000 PSI (68.5 BAR) reserve.

The Turn Pressure Alarm can be disabled by setting the value at '00'.

TO SET: TURN PRESSURE ALARM SET POINT

The Turn Pressure Alarm can be set to values between 1000 PSI (68.5 BAR) and 3000 PSI (206.5 BAR) in 250 PSI (17 BAR) increments to alert you.

- press BOTH buttons simultaneously, while in Surface Mode
- press Advance (Left) button **3 times**
- the Alarm icon and 'trn' appear with the Pressure value flashing (Fig. 22)
- press Select (Right) button until the desired Pressure Alarm value appears
- press Advance (Left) button to accept the setting displayed, and either -
    - revert to Surface Mode (if this setting was changed), or -
    - advance to Set: End Pressure Alarm (this setting was not changed)

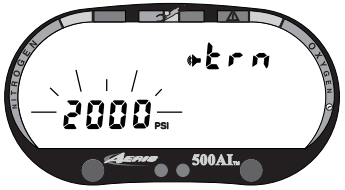


Fig. 22 - Set Turn Pressure

TO SET: END PRESSURE ALARM SET POINT

The End Pressure Alarm can be set to values between 300 PSI (20 BAR) and 1000 PSI (68 BAR) in 100 PSI (6 BAR) increments to warn you.

- press BOTH buttons simultaneously, while in Surface Mode
- press Advance (Left) button **4 times**
- the Alarm icon and 'End' appear with the Pressure value flashing (Fig. 23)
- press Select (Right) button until the desired Pressure Alarm value appears
- press Advance (Left) button to accept the setting displayed, and either -
    - revert to Surface Mode (if this setting was changed), or -
    - advance to Set: Units of Measure (this setting was not changed)

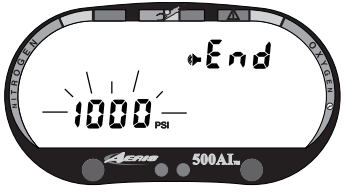


Fig. 23 - Set End Pressure

TO SET: UNITS OF MEASURE

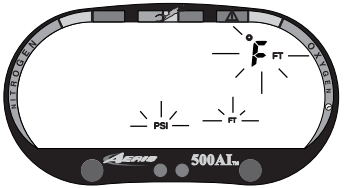


Fig. 24 - Set Units

- press BOTH buttons simultaneously, while in Surface Mode
- press Advance (Left) button **5 times**
- the Units of Measure icons appear flashing (Fig. 24)
- press Select (Right) button to toggle between 'FT, °F' and 'M, °C'
- press Advance (Left) button to accept the setting displayed, and either -
    - revert to Surface Mode (if this setting was changed), or -
    - advance to EA Mode (this setting was not changed)

EA MODE

Although included in the menu structure, External Access (EA) Mode has no settings. It is accessed only when data is being downloaded (copied) to the Dive Downloader PC software program for storage and viewing.

EA Mode is described on page 53 in the Post Dive Mode section.

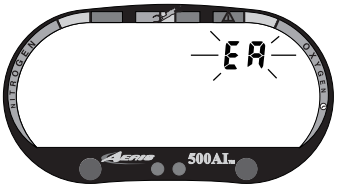


Fig. 25 - EA Mode

- press Advance (Left) button to 'bypass EA Mode' (Fig. 25) and revert to Surface Mode

TO SET: DATE/HOUR FORMAT/TIME

Date (Year, Month, Day), Time Format, and Time (hour, minute) can be set in sequence as described here (once Year has been accessed), or any one can be accessed and modified by bypassing those you don't want to change.

- press BOTH buttons simultaneously, while in Surface Mode
- press Advance (Left) button **5 times**
- the Date appears with the **Year** setting (Fig. 26a) flashing
  - press Select (Right) button until the correct Year appears
  - press Advance (Left) button **1 time** to accept the setting displayed
- the **Month** setting (Fig. 26b) flashes
  - press Select (Right) button until the correct Month appears.
  - press Advance (Left) button **1 time** to accept the setting displayed
- the **Day** setting (Fig. 26c) flashes
  - press Select (Right) button until the correct Day appears.
  - press Advance (Left) button **1 time** to accept the setting displayed

- the **Hour Format** appears flashing (Fig. 27)
  - 12 Hr format = 12: Am to 11: Pm
  - 24 Hr format = 0: to 24: (hours)

- press Select (Right) button to toggle between '12' and '24'
- press Advance (Left) button **1 time** to accept the setting displayed

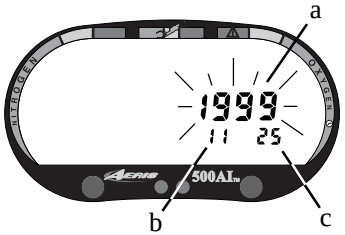


Fig. 26 - Set Date

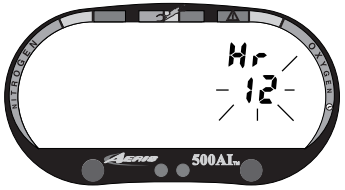


Fig. 27 - Set Hour Format

- the Time appears with the **Hour** setting (Fig. 28a) flashing
- press Select (Right) button until the correct Hour appears.
- press Advance (Left) button **1 time** to accept the setting displayed
- the **Minute** setting (Fig. 28b) flashes
- press Select (Right) button until the correct Minute appears.
- press Advance (Left) button to accept the setting displayed, and either -
    - revert to Surface Mode (if this setting was changed), or -
    - advance to Set: Sampling Rate (Date/Time settings not changed)

SAMPLING RATE

Sampling Rate is the Time, or Depth, interval at which data samples will be recorded during a dive for subsequent download to the Dive Downloader PC software program. The set point has 'no effect' upon displayed data or data stored in the unit's viewable Log.

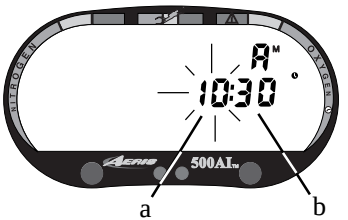


Fig. 28 - Set Time of Day

Rates available are 2 FT (.5M), 5 FT (1.5 M), 10 FT (3 M), 2 SEC, 5 SEC, 10 SEC, 15 SEC, 20 SEC, 25 SEC, 30 SEC.

When lower rates (e.g., 2 FT, 2 SEC, etc.) are selected more samples are recorded per dive making the PC profile graphs smoother. However, since more memory is used per dive, fewer dives can be stored for download. Also, lower sampling rates require longer periods of time to download (up to 45 minutes).

TO SET: SAMPLING RATE

- press BOTH buttons simultaneously, while in Surface Mode
- press Advance (Left) button **13 times**
- the Rate setting appears flashing (Fig. 29)
- press Select (Right) button until the desired Rate appears.
- press Advance (Left) button to accept the setting displayed, and -
    - revert to Surface Mode

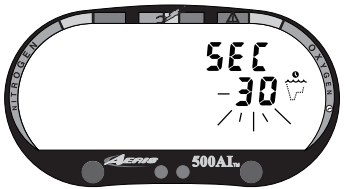


Fig. 29 - Set Sampling Rate

SUMMARY OF SET MODES

(*settings entered by the factory appear in italics*)

To access a specific Set mode <u>from the Surface Mode</u>, press the button(s) as follows:

SET MODE	**TO ACCESS**	**TO VIEW**	**TO SAVE**
To access/set>	Both '1' time>		
• FO2 Default *(On)*	Left '0' times>	Right - toggle (On/Off)>	Left - to Surface* or Audible
• Audible Alarm *(On)*	Left '1' time>	Right - toggle (On/Off)>	Left - to Surface* or Depth Alarm
• Depth Alarm *(320 ft)*	Left '2' times>	Right - 10 ft (3 m)/sec>	Left - to Surface* or Turn Pressure
• Turn Pressure *(3000 psi)*	Left '3' times>	Right - 250 psi (17 BAR)/sec>	Left - to Surface* or End Pressure
• End Pressure *(1500 psi)*	Left '4' times>	Right - 100 psi (7 BAR)/sec>	Left - to Surface* or Units
• Units (*Imperial*)	Left '5' times>	Right - toggle>	Left - to Surface* or EA
• EA (download)	Left '6' times>	> > >	Left - to Surface* or Year
• Year *(1999)*	Left '7' time>	Right - 1 year/sec>	Left - to Month
• Month *(1)*	Left '8' times>	Right - 1 month/sec>	Left - to Day
• Day *(1)*	Left '9' times>	Right - 1 day/sec>	Left - to Hour Format
• Hour Format *(12)*	Left '10' times>	Right - toggle 12/24>	Left - to Hour
• Hour *(12)*	Left '11' times>	Right - 1 hour/sec>	Left - to Minute
• Minute *(00)*	Left '12' times>	Right - 1 minute/sec>	Left - to Surface* or Rate
• Sample Rate *(10 FT)*	Left '13' times>	Right - 1 rate/sec>	Left - to Surface

* If the setting was altered

PRE DIVE
and
DIVE MODES

OPERATIONAL MODES

While on the surface, the Control Buttons enable you to access operational modes and activate the backlight. During a dive, they enable you to view an Alternate display of information and activate the backlight.

TEMPERATURE/TIME/DATE MODE

To view Ambient Temperature/Time/Date (Fig. 30) while in Surface Mode:

- Press the Advance (Left) button **1 time.**
- The backlight will illuminate the display for 10 seconds.
- The unit reverts to Surface Mode after 10 seconds, unless the Advance (Left) button is pressed to access FO2 Set Mode.

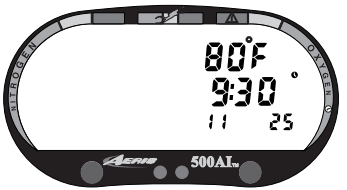


Fig. 30 - Temp/Time/Date

Set for Imperial units of measure, Month is on the left and Day on the right. Set for Metric, Day is on the left and Month on the right. Year doesn't appear.

FO2 MODE

The 500AI can be used either as an Air computer or as a Nitrox computer. After activation, it will operate as an Air computer without displaying information associated with oxygen calculations, unless the percentage of oxygen (FO2) is set for a value other than 'Air' (i.e., a numerical value of 21 to 50 %).

FO2 50% Default

If the Default is set to 'On' and FO2 is set to a value 'greater than 21%', the FO2 set point value will automatically revert to 50% 10 minutes after that dive (Fig. 31). The Maximum Depth that can be achieved with an oxygen partial pressure (PO2) of 1.60 ATA will also be displayed.

- FO2 must therefore be reset for each repetitive nitrox dive, or the value will automatically 'default' to 50 and the dives will be calculated based on 50% O2 for oxygen calculations and 21% O2 (79% nitrogen) for nitrogen calculations.

⚠ **WARNING: If you surface for greater than 10 minutes during a dive, a subsequent descent will be considered a new dive and the FO2 value must be reentered.**

If the Default is set to 'Off', the FO2 value for repetitive dives remains the same until the FO2 set point is manually changed.

⚠ **WARNING: Even if the Default is set OFF, the FO2 setting must be verified to match the percentage of oxygen (FO2) in the nitrox mix being used 'before each nitrox dive'.**

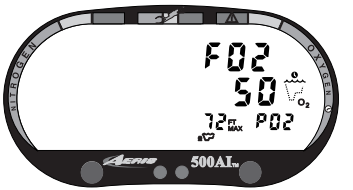


Fig. 31 - FO2 50% Default

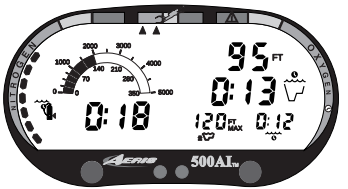


Fig. 32 - Dive Mode
(FO2 Set for Air)

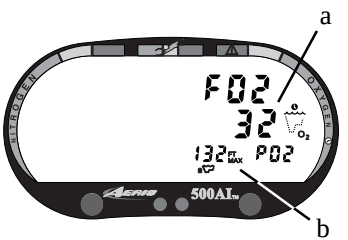


Fig. 33 - Setting FO2

FO2 Set for an Air Dive

When set with an FO2 value of 'Air', the 500AI will perform calculations the same as if FO2 were set for 21% oxygen, internally accounting for oxygen loading for any subsequent Nitrox dives. However, oxygen related displays, warnings, and the O2 Bar Graph will not appear on the display for that dive (Fig. 32), or subsequent dives, unless FO2 is set for a numerical value (21 to 50%).

Setting FO2

To access FO2 Set Mode while in the Surface Mode and set the unit for Air or the percentage (%) of oxygen (FO2) in your nitrox mix:

- press the Advance (Left) button **2 times**
- press the Select (Right) button repeatedly, or press and hold it, until the value of FO2 for the nitrox mix being used is displayed
- the FO2 value displayed (Fig. 33a) will advance from 21 to 50 (%) in increments of 1 (%), then display 'Air' again.
- the Maximum Depth that can be achieved with an oxygen partial pressure (PO2) of 1.60 ATA will be displayed (Fig. 33b) for each FO2 value. No PO2 value will appear for Air.

The unit reverts to Surface Mode after 2 minutes, unless the Advance (Left) button is pressed to access the Plan Mode.

FO2 Set for a Nitrox Dive

You can set the 500AI for nitrogen-oxygen (nitrox) mixtures of 21% to 50% oxygen (O2). If FO2 is set at a value of 21% (Fig. 34), the unit will remain set as a '21% nitrox computer' for subsequent nitrox dives until FO2 is set to a higher value, or until it automatically turns off and is reactivated.

Once a dive is made with the Pro Plus set as a nitrox computer (FO2 set for a numerical value), it cannot be set for 'Air' until 24 hours after the last nitrox dive. However, you can set FO2 for 21% for use with Air.

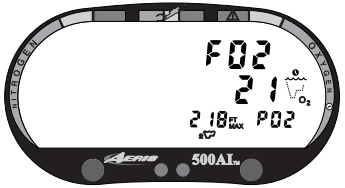


Fig. 34 - FO2 Set at 21%

PLAN MODE

AERIS strongly recommends that you access the Plan Mode prior to every dive to review the Planning Sequence (Fig. 35) that will help you plan your dive as required to avoid exceeding no decompression, or oxygen exposure, limits. This is especially important for repetitive dives, when the Planning Sequence will indicate for you the 'adjusted' no decompression dive times that are available to you for your next dive, based on any residual nitrogen or oxygen accumulation (whichever is in control) following your last dive and surface interval.

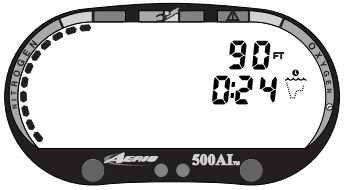


Fig. 35 - Plan Mode

WARNING: The Planning Sequence predicts only no decompression times for subsequent dives. Depending on cylinder size, breathing gas consumption, and oxygen accumulation, you may have *less time available* than indicated because of breathing gas quantity or other limitations.

Depth feet (meters)		500AI NDLs minutes Eng (Metric)	
30	(9)	260	(283)
40	(12)	137	(144)
50	(15)	80	(84)
60	(18)	57	(58)
70	(21)	40	(41)
80	(24)	30	(31)
90	(27)	24	(26)
100	(30)	19	(20)
110	(33)	16	(16)
120	(36)	13	(13)
130	(39)	10	(11)
140	(42)	9	(9)
150	(45)	8	(8)
160	(48)	7	(7)

Fig. 36 - No Decompression Limits (NDLs)

To access the Planning Sequence while in the Surface Mode:

- press the Advance (Left) button **3 times** (prior to a day's first dive), or -
- press the Advance (Left) button **4 times** (if a dive has been made)
- press repeatedly, or press and hold, the Select (Right) button
- a sequence of depths from 30 to 160 feet (9 to 48 meters) in 10 foot (3 meter) increments will be displayed together with the 'predicted' no decompression limit for that depth (Fig. 36).

No decompression times are only displayed for depths where there is at least 3 minutes of dive time available at the depth, taking into account a descent rate of 120 feet (36 meters) per minute. Depths greater than the maximum depth that can be achieved with a partial pressure of oxygen (PO2) of 1.60 ATA will not be displayed.

The unit reverts to Surface Mode 2 minutes after the Select (Right) button is released, unless the Advance (Left) button is pressed to access the Log Mode.

Plan Mode Prior to a 'Repetitive Nitrox Dive'

If the segments of the Nitrogen Bar Graph are displayed (Fig 37) during the Planning Sequence, that next dive is calculated to be controlled by nitrogen loading.

If the segments of the O2 bar graph are displayed (Fig. 38), that next dive is calculated to be controlled by oxygen loading.

The 500AI will store oxygen accumulation for up to 10 dives conducted during a 24 hour period. In the event that the maximum limit for oxygen loading has been exceeded for that day, all of the segments of the O2 bar graph will be displayed (Fig. 39).

Depth and Time displays will not appear until the O2 bar graph recedes into the green (normal) zone (e.g., your daily oxygen dosage decreases an amount equivalent to the amount accumulated during the latest dive completed).

WARNING: The 500AI must be manually activated and be in an operating mode prior to start of a dive. The unit will not activate automatically by immersion in water. Also, FO2 must be verified or set prior to commencing each nitrox dive.

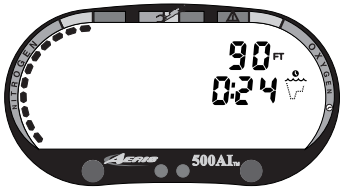


Fig. 37 - Nitrogen Controlled

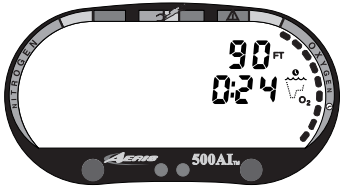


Fig. 38 - Oxygen Controlled

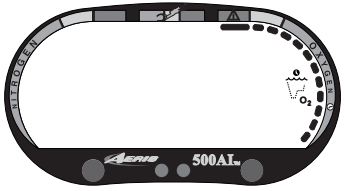


Fig. 39 - Max Daily O2 Limit Exceeded

NO DECOMPRESSION DIVE MODE

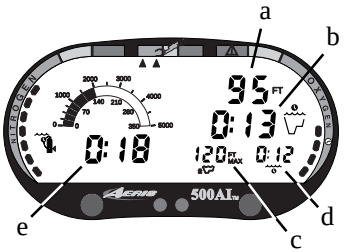


Fig. 40 - Dive Mode (Main)

As long as it is activated on the surface, the 500AI will enter the No Decompression Dive Mode when you descend deeper than 5 feet (1.5 meters), regardless of the operating mode it is in.

To activate the backlight at any time* during a dive, press the Select (Right) button. The display will be illuminated as long as the button is depressed plus 5 seconds after it is released.

*The backlight will not activate during a Low Battery condition.

No Decompression Dive Mode Main Display (Fig. 40)

Information includes - Current Depth (a), the No Decompression Dive Mode icon, Dive Time Remaining (b) and icon, Maximum Depth (c) and icon, Elapsed Dive Time (d) and icon, Breathing Gas Time Remaining (e) and icon, and the applicable bar graphs.

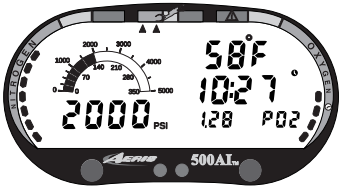


Fig. 41 - Alternate Display

No Decompression Dive Mode Alternate Display (Fig. 41)

To view an Alternate Display during a dive, press the Advance (Left) button. Information includes - Temperature, Time of Day, current value of PO2 (if a nitrox dive), Tank Pressure, and the applicable bar graphs.

Dive Mode Bar Graphs (Fig. 42)

As your depth and/or elapsed dive time increase, the Nitrogen Bar Graph will fill with segments (green toward red) to represent the absorption of nitrogen; and if FO2 was set for a value other than 'Air', the O2 Bar Graph will fill with segments (green toward red) to represent oxygen accumulation for that dive, or 24 hour period, whichever is greater.

The Tank Pressure Bar Graph will recede from green toward red as breathing gas is consumed. Segments of the Ascent Rate Indicator will fill (and recede) as your ascent rate increases (and decreases) throughout the dive.

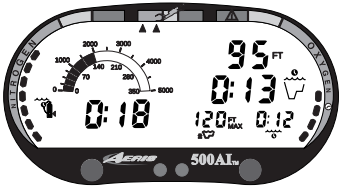


Fig. 42 - Bar Graphs

WARNING: Every effort should be made to keep all of the bar graphs *in the green* throughout your dives to reduce your risk of exposure to decompression sickness and oxygen toxicity.

ENTERING DECOMPRESSION DIVE MODE

The 500AI provides information that will help you avoid or, if necessary, manage emergency decompression.

The Decompression Dive Mode activates when the No Decompression Limits are exceeded and the Nitrogen Bar Graph enters the red decompression zone (Fig. 43a). Decompression Dive Mode is described on page 57.

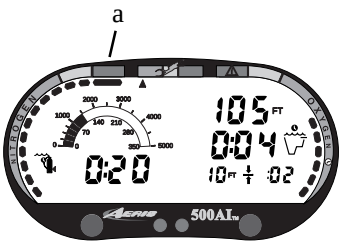


Fig. 43 - Decompression Dive Mode

VIOLATION AND GAUGE MODES

The 500AI enters Violation Modes when it is unable to predict an ascent procedure.

If the 500AI enters a Permanent Violation Mode, it will not display information relating to nitrogen or oxygen loading for the remainder of that dive or for subsequent dives conducted during the 24 hour period after surfacing. It will operate in a Gauge Mode displaying only Depth and Elapsed Time.

NOTE: Violation Modes and Gauge Mode are described on pages 60 - 65.

ASCENDING TO THE SURFACE

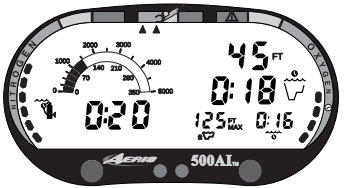


Fig. 45 - Nitrogen Bar Graph (receding)

While ascending to shallower depths, the segments that have filled up the Nitrogen Bar Graph will begin to recede (Fig. 45), offering a graphic representation of your multilevel diving capability.

A safety stop made between 15-20 feet (5-6.5 meters) is strongly recommended as a standard procedure before completing your ascent.

You should make every effort to complete all of your ascents with the Nitrogen Bar Graph inside of the green zone.

If you inadvertently entered Decompression Mode, you must not complete your ascent until the Nitrogen Bar Graph is at least inside the yellow Caution Zone.

While you cannot provide a guarantee against the occurrence of decompression sickness, you may choose your own personal zone of caution based upon your individual age, physique, excessive weight, training, experience, etc. to reduce the statistical risk. By 'backing off' on the bar graph (maintaining fewer segments), you can establish and adjust your personal level of conservatism and margin of safety.

ASCENDING TOO FAST

The Ascent Rate Indicator shows how fast you are ascending. When you exceed the maximum recommended ascent rate of 60 feet (18 meters) per minute, the bar graph will enter the red (Too Fast) zone (Fig. 46a), and you will be alerted by the segments flashing. You will also be alerted by an Audible Alarm (1 beep per second). The warnings will stop when your ascent rate is slowed.

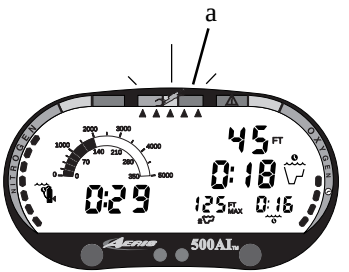


Fig. 46 - Ascent Too Fast

ALTITUDE DIVING

The mathematical model within the 500AI accounts for the reduced No Decompression dive time available at higher elevations based on NOAA (National Oceanic and Atmospheric Administration) guidelines. When diving in high altitude lakes or rivers from 2,000 to 14,000 feet (610 to 4,268 meters), the 500AI will adjust automatically, providing corrected depth and reduced No Decompression and Oxygen Exposure times.

WARNING: If activated above 14,000 feet (4,268 meters), the unit will perform a diagnostic check and immediately shut off.

When above 2,000 feet (610 meters), depth calibration is automatically changed to read in 'feet of freshwater' rather than' feet of seawater'.

WARNING: Until it has shut itself off, you must not use the 500AI at a different altitude than the altitude where it was originally activated. Doing so will result in an error equal to the difference in barometric pressure, and possibly a false dive mode with erroneous data.

More about Altitude Diving is presented on page 88.

Be a -
RESPONSIBLE DIVER
at all times.

POST DIVE MODES

POST DIVE SURFACE MODE

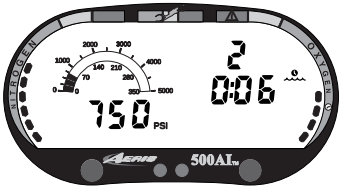


Fig. 47 - Transition Period

When you ascend to 3 feet (1 meter) or shallower, the 500AI will enter Surface Mode and begin counting your surface interval.

TRANSITION PERIOD

The first 10 minutes is, in affect, a Transition Period during which time the following information is displayed (Fig. 47):

- 'Number' of that dive
- Surface Interval (colon flashing) and icon (flashing).
- Tank Pressure (digital display and Bar Graph)
- Nitrogen Bar Graph indicating current nitrogen loading.
- O2 Bar Graph indicating current oxygen loading (if a nitrox dive)

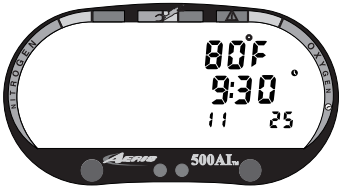


Fig. 48 - Temp/Time/Date

If you descend during the 10 minute Transition Period, time underwater will be considered a continuation of that dive. The time at the surface (if less than 10 minutes) will not be added as Elapsed Dive Time.

To view the Temperature/Time/Date (Fig. 48):

- press the Advance (Left) button 1 time
- the unit will revert to Surface Mode after 10 seconds

To view that dive's Log (Fig. 49):

- press Advance (Left) button 2 times (while in Surface Mode), or -
- press Advance (Left) button 1 time (while viewing Temp/Time/Date)
- press Select (Right) button 1 time to view the Nitrogen data screen
- press Select (Right) button again to view the Oxygen data screen
- the unit will revert to Surface Mode after 2 minutes

Data will not be stored in the unit's memory until the 10 minute Transition Period on the surface is completed. Also during the 10 minute Transition Period no other modes are accessible.

Fig. 49 - Dive Log
(during Transition Period)

AFTER THE TRANSITION PERIOD (THE FIRST 2 HOURS)

Once 10 minutes have elapsed, the Surface Mode icon and Surface Interval time display colon will stop flashing indicating that the dive and transition period are completed, and a subsequent descent will be considered a new dive.

For the remainder of the **first 2 hours after surfacing**, information will continue to be displayed as Surface Mode (Fig. 50) and you will have full access to the other modes.

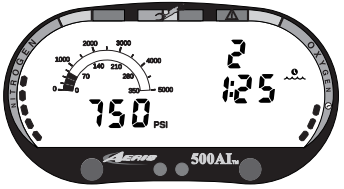


Fig. 50 - Surface Mode
(first 2 hours)

To view the Temperature/Time/Date:

- press the Advance (Left) button 1 time
- the unit will revert to Surface Mode after 10 seconds

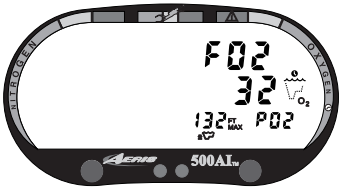


Fig. 51 - FO2 (Default OFF)

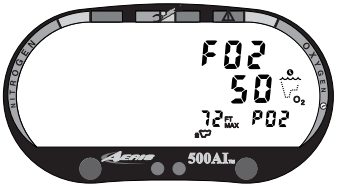


Fig. 52 - FO2 (Default ON)

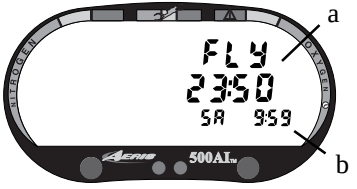


Fig. 53 - Time to Fly and Time to Desaturate

To access FO2 Mode:

- press the Advance (Left) button **2 times** (while in Surface Mode)
- If the FO2 Default was set OFF, the FO2 setting displayed will be the same value previously set (Fig. 51).
- If the FO2 Default was set ON, the FO2 value displayed (Fig. 52) will be the 'default value' of 50 (%) and will have to be set for the breathing gas used for the next dive.
- press the Select (Right) button to alter the setting, if required.
- the unit reverts to Surface Mode after 2 minutes, unless the Advance (Left) button is pressed to access the Time to Fly and Desaturate.

To access Time to Fly and Desaturate Countdowns:

- press the Advance (Left) button **3 times** (while in Surface Mode)
- The unit reverts to Surface Mode after 2 minutes, unless the Advance (Left) button is pressed to access the Log Mode.

The Time To Fly counter (Fig. 53a) begins counting down 10 minutes after the last dive (after the Transition Period) displaying the word 'FLY' with a count-down that starts at 23:50 (hr:min) and counts down to 0:00 (hr:min).

The Time to Desaturate counter (Fig. 53b), provides calculated time for tissue desaturation at sea level. The countdown starts at 9:59 (hours:minutes) maxi-mum and counts down to 0:00.

If the Time to Desaturate is calculated to be greater than 9:59, the display will indicate 9:- - (Fig. 54) until it decreases to 9:59.

If a violation occurred during the dive, Time to Desaturate will not be displayed and a single dash (-) will appear instead of the letters FLY (Fig. 55a).

To access Plan Mode:

- press the Advance (Left) button **4 times** (while in Surface Mode)
- press the Select (Right) button to scroll through the sequence
- The unit reverts to Surface Mode after 2 minutes, unless the Advance (Left) button is pressed to access the Log Mode.

The Planning Sequence will now show 'adjusted' No Decompression Limits (Fig. 56) based on residual nitrogen calculated to be remaining from the previous dives. Calculated dive times and the maximum allowed depth displayed will increase as the real time surface interval increases after completion of a dive.

The Planning Sequence will only scroll to the maximum depth allowed by the nitrogen or oxygen limit, whichever is in control. The respective bar graph will be displayed to indicate which is in control.

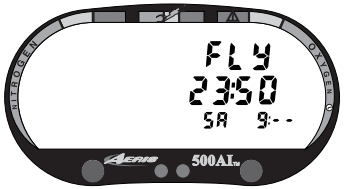


Fig. 54 - Desaturate (>9:59)

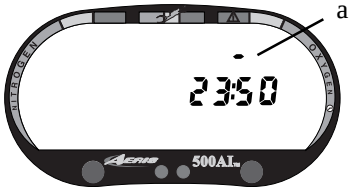


Fig. 55 - After a Violation

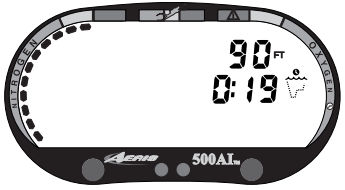


Fig. 56 - Adjusted Limits

LOG MODE

Information from your 12 latest dives is stored in the **Log** for viewing. After 12 dives are accumulated, each subsequent dive will overwrite the oldest dive in the log (i.e., the most recent dive deletes the oldest). Log information will not be lost when the battery is removed, but factory service will delete data.

Dives are displayed in a reverse sequence that starts with the dive most recently recorded back to the oldest of the 12 dives stored. Thus, your most recent dive will always be the first shown in the sequence. Each dive has three log screens - Date/Time started, Nitrogen data, and Oxygen data.

Dives are identified by the Date/Time and number. The first dive of a new day (after midnight) will be #1.

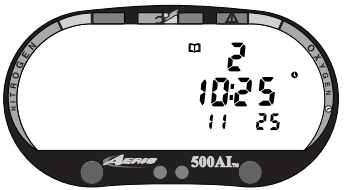


Fig. 57 - Log Mode
(first screen - Time/Date)

The Advance (Left) button is used to access each dive's log.
The Select (Right) button is used to view second and third screens for that dive (Nitrogen and Oxygen related data).

To access the Log Mode:

- press the Advance (Left) button **5 times** (while in Surface Mode)
- the first screen (Fig. 57) of the most recent dive will appear displaying -
  - Log Mode icon and Dive Number
  - Time of Day and Date that the dive started (and icon)

To access a specific dive's log, press the Advance (Left) button repeatedly.

To view the second screen for that dive **(Nitrogen Log-** Fig. 58):

- press the Select (Right) button **1 time.** Displayed will be -
  - Log Mode icon
  - Dive number
  - Surface Interval prior to that dive (and icon)
  - Maximum Depth reached for the dive (and icon)
  - Elapsed Dive Time (and icon)
  - Ascent Rate Indicator - showing the maximum ascent rate maintained for 4 consecutive seconds during the dive
  - Nitrogen Bar Graph - showing tissue nitrogen loading at the end of the dive

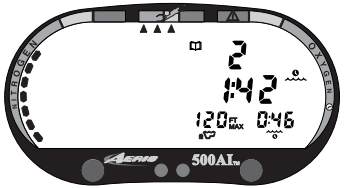


Fig. 58 - Log Mode
(second screen - nitrogen)

To view the third screen for that dive (**Oxygen Log** - Fig. 59):

- press the Select (Right) button **1 time.** Displayed will be -
  - Log Mode icon
  - FO2 value - set for that dive (and 'FO2' symbol)
  - Maximum PO2 level - reached during that dive (and 'PO2' symbol)
  - O2 bar graph - showing oxygen loading at the time you surfaced.
- If FO2 was set for 'Air' for that dive, the O2 screen will only display 'FO2' and 'Air'.
- press the Advance (Left) button 1 time to view the first screen of the previous dive's log.

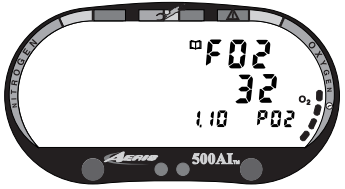


Fig. 59 - Log Mode
(third screen - oxygen)

To exit Log Mode and return to the Surface Mode:

- press the Advance (Left) button repeatedly to proceed through the remaining recorded dives.
- the unit will automatically revert to Surface Mode after 2 minutes, if no button is pressed

AFTER THE FIRST 2 HOURS

Two hours after the last dive the Surface Mode will no longer be displayed. The **Time to Fly and Desaturate** countdown timers will be displayed continuously, giving the final countdowns from 22:00 and 9:xx to 0:00 (Fig. 60).

To access other modes or enter settings:

- press the Select (Right) button to enter Surface Mode
- the unit will revert to Fly Mode after 2 hours, if no button is pressed

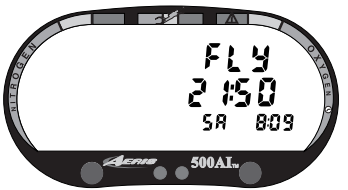


Fig. 60 - After 2 Hours
On the Surface

DOWNLOADING DATA TO PC

Using special linking hardware and a unique PC software program, data from your dives can be downloaded (copied) from your 500AI into an IBM compatible PC program running on a Windows® 95 or 98 operating system. Instructions for performing the interface and download are provided with the Dive Downloader for 500AI hardware and software package. The Dive Downloader program provides profile data sampled throughout the dive.

To access the External Access (EA) Mode:

- press **both** buttons simultaneously while in Surface Mode
- press the Advance (Left) button **6 times**
- the letters EA appear, flashing (Fig. 61)
- press the Advance (Left) button to revert to Surface Mode, or -
- press the Select (Right) button to initiate download
- the unit will automatically revert to Surface Mode after download is complete, or in 2 minutes if no button is pressed
- the backlight will not operate while in EA Mode

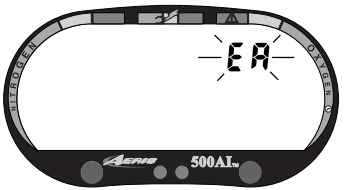


Fig. 61 - EA Mode

SUMMARY OF POST DIVE MODES

During the first 2 hours after a dive* (*after the 10 minute Transition Period has ended*):

MODES	TO ACCESS	TO VIEW
Backlight	press Right '1 time'	
Temperature/Time/Date	press Left '1 time'	
FO2 set	press Left '2 times'	> press Right (hold or repetitive)
Fly/Desaturate	press Left '3 times'	
Plan Sequence	press Left '4 times'	> press Right (hold or repetitive)
Log Mode	press Left '5 times'	> press Right (hold or repetitive)
Set Mode	press Both '1 time'	> Refer to page 32 of this Guide
EA Mode	press Both '1 time'	> press Left '6 times' > Right '1 time'

***After the First 2 Hours, the unit will remain in Fly/Desaturate Mode. To access other Modes:**

- **press the Right button to return to the Surface Mode, then press the buttons as indicated above.**

HANDLING THE EXTREMES

EMERGENCY DECOMPRESSION

The 500AI is a sophisticated instrument designed with capabilities that go beyond the range of recreational diving with compressed air. It will help you to avoid and, if necessary, manage decompression.

NOTE: See pages 70 and 71 for additional safety information.

NITROGEN BAR GRAPH

The Nitrogen Bar Graph offers you a convenient way to consistently monitor how close you are coming to the No Decompression Limit. As you use the 500AI and become familiar with the Nitrogen Bar Graph, you will notice that it displays fewer segments for shorter dive times and shallower depths. Use this feature to adjust conservatism to your diving needs.

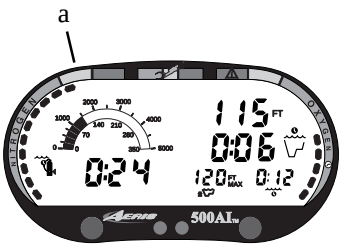


Fig. 62 - Caution Zone

CAUTION: Use the yellow Caution Zone (Fig. 62a) as a visual reference to place a wider margin of protection between you and the No Decompression Limit.

AERIS suggests keeping the Nitrogen Bar Graph in the green No Decompression (NO DECO) zone during all of your dives, and that it always be in the 'green' when leaving the water.

DECOMPRESSION DIVE MODE

The 500AI is designed to help you by providing a complete representation of how close you are to entering decompression. Decompression Dive Mode activates when theoretical no decompression time/depth limits are exceeded.

In the event that you enter Decompression Mode, as indicated by a double beep and the large red segment of the Nitrogen Bar Graph and ceiling bar of the Decompression Mode icon flashing, immediately begin a safe controlled ascent to a depth slightly deeper than, or equal to, the Required Ceiling Stop Depth indicated (Fig. 63a) and decompress for the Stop Time indicated (Fig. 63b).

Other information appearing on the **Main Display** includes:

- current Depth (Fig. 63c)
- Total Ascent Time (Fig. 63d) - that includes stop times required at all ceilings and vertical ascent time calculated at 60 ft (18 m) per minute.
- Breathing Gas Time Remaining and icon (Fig. 63e)
- O2 bar graph (if a nitrox dive), Ascent Rate Indicator, and Tank Pressure bar graph

To activate he **Backlight**, press the Select (Right) button. The display will remain illuminated for button depression time plus 3 seconds.

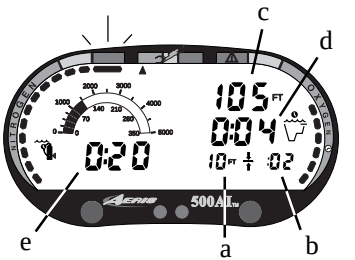


Fig. 63 - Decompression Mode (Main Display)

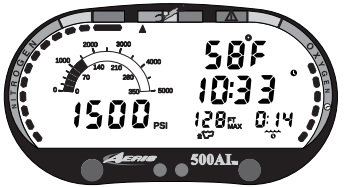


Fig. 64 - Alternate Display

To view an **Alternate Display** of information (Fig. 64), press the Left (Advance) button. Information appearing includes -

- water Temperature
- Time of Day and icon
- Elapsed Dive Time and icon
- Maximum Depth and icon
- Tank Pressure (digital display and Bar Graph)
- The Bar Graphs will continue to be displayed as applicable.
- The unit will revert to the Main Display after 10 seconds, or if the Advance (Left) button is pressed.

Breathing Gas Time Remaining During Decompression

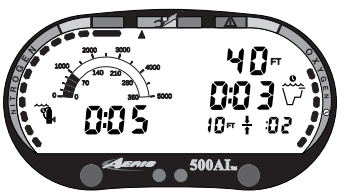


Fig. 65 - Gas Time Remaining (5 minutes)

Breathing Gas Time Remaining will fluctuate throughout your dive, decreasing as you dive deeper or breath heavier, and increasing as you ascend to shallower depths or relax your breathing efforts.

When Breathing Gas Time Remaining decreases to **5 minutes**, the Tank Pressure digital display will flash (Fig. 65) and a Double Beep will sound. This means that only 5 minutes remain before your breathing gas supply will be reduced to the minimum level necessary to perform the required decompression stops and still provide a Tank Pressure reserve upon surfacing.

When the Breathing Gas Time Remaining decreases to **zero minutes**, the Audible Alarm will continuously beep once per second* (Fig. 66), signaling the need for an immediate safe ascent to your first decompression stop.

*If the Audible Alarm feature was set to OFF prior to the dive, only a double beep will be emitted to alert you.

There is no need to panic. The 500AI has allowed for (calculated) the breathing gas you will consume while making a safe controlled ascent, including that required for decompression stops, and still provide the surfacing tank pressure reserve you chose (set) as the End Pressure Alarm Set Point.

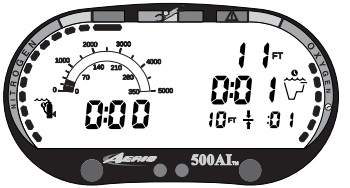


Fig. 66 - Gas Time Remaining (zero minutes)

MANAGING DECOMPRESSION STOPS

The amount of decompression credit time that you receive is dependent on depth, with slightly less credit given the deeper you are.

You should stay slightly deeper (Fig. 67a) than the Required Stop Depth indicated (Fig. 67b) until the next shallower Stop Depth appears. Then, you can slowly ascend to, but not shallower than, that indicated ceiling Stop Depth.

Once all required decompression has been completed, the 500AI will revert to the No Decompression Dive Mode. This is indicated by Total Ascent Time = 0:00, and the Nitrogen Bar Graph receding into the Caution Zone.

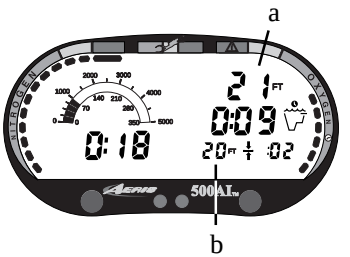


Fig. 67 - Managing a Stop

Dive Time Remaining now appears in place of Total Ascent Time (Fig. 68) displaying No Decompression Dive Time Remaining or Oxygen Accumulation Time Remaining (whichever time is the least and in control).

WARNING: If you exceed certain limits, the 500AI will not be able to tell you how to get safely back to the surface. These situations exceed tested limits and can result in loss of some 500AI functions for 24 hours after the dive in which a Violation occurred.

VIOLATION MODES

Violation Modes the 500AI can enter are termed Conditional, Delayed, and Immediate. Permanent Violation Mode and Gauge Mode are continuations of these.

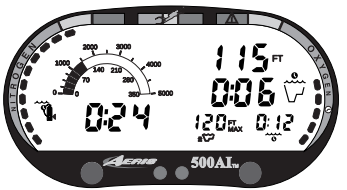


Fig. 68 - Reentry into No Decompression Mode

WARNING: It is important to understand each different Violation Mode and how to carry out emergency procedures in the event that you enter one.

While in Violation Modes, the Alternate Displays previously described can be accessed using the Advance (Left) button, and the Backlight can be activated using the Select (Right) button.

CONDITIONAL VIOLATION MODE

The 500AI will enter the Conditional Violation Mode **if you ascend shallower (Fig. 69a) than the Required Decompression Ceiling** Stop Depth displayed (Fig. 69b).

The Audible Alarm will beep once per second* and the Total Ascent Time display (Fig. 69c) will flash until you descend below the Required Stop Depth.

*If the Audible Alarm feature was set to OFF prior to the dive, only a double beep will be emitted to alert you.

If you descend below the required decompression ceiling before 5 minutes have elapsed, the 500AI will continue to function in Decompression Dive Mode. In this case, no off-gassing credit will be given, and for each minute above the ceiling $1^{1}/_{2}$ minutes of **penalty time** is added to Required Stop Time.

The added penalty decompression time will have to be 'worked off' first, before obtaining off-gassing credit. Once the penalty time is worked-off, and off-gassing credit begins, required decompression Stop Depths and Time will decrease toward zero, then the Nitrogen Bar Graph will recede into the yellow Caution Zone and the 500AI will revert to the No Decompression Dive Mode.

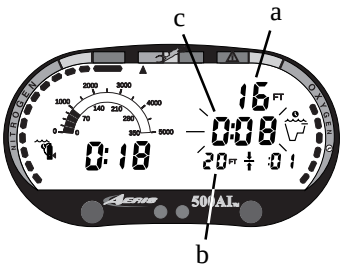


Fig. 69 - Conditional Violation

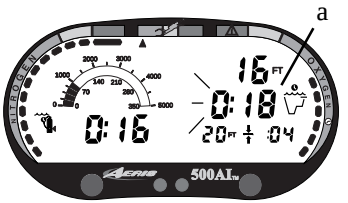


Fig. 70 - Delayed Violation (above ceiling >5min)

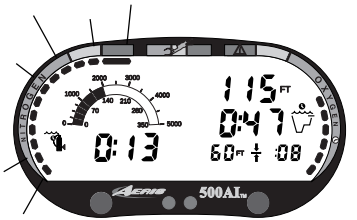


Fig. 71 - Delayed Violation (>60 FT ceiling required)

DELAYED VIOLATION MODE

Three conditions cause the 500AI to enter the Delayed Violation Mode:

1. You remain above the Required Ceiling Stop Depth for 'more than 5 minutes'.

The Audible Alarm will emit one long beep and the Total Ascent Time display will flash (Fig. 70a) until you descend below the Required Stop Depth. You would then need to follow the Stop Depths and Times toward the surface until the Nitrogen Bar Graph recedes into the yellow Caution Zone.

2. Your necessary Decompression requires a Ceiling Stop Depth 'between' 60 feet (18 meters) and 70 feet (21 meters).

The Audible Alarm will emit one long beep and the Nitrogen Bar Graph will flash. Total Ascent Time needed to get back to the surface will still be displayed (Fig. 71).

You must ascend to just deeper than 60 feet (18 meters), staying as close to 60 feet (18 meters) as possible without causing the Total Ascent Time display to flash. When the Required Stop Depth indicates 50 FT/ 15 M, etc., you can ascend to, but no shallower than those depths and continue decompressing.

The 500AI cannot accurately calculate decompression times for Stop Depths much greater than 60FT (18M) and offers no indication of how much time spent underwater would result in the need for a greater stop depth.

3. You exceed the maximum operating depth (330 feet/99.5 meters).

The Audible Alarm will beep once per second* when you descend deeper than the Depth Alarm set point that you selected (set).

*If the Audible Alarm feature was set to OFF, only a double beep.

Upon descending deeper than 330 feet (99.5 meters), the Nitrogen Bar Graph will flash and the Current Depth and Max Depth displays will only indicate 'oor' (Fig. 72) until ascent is made to a depth shallower than 330 feet (99.5 meters). Once you ascend above 330 feet (99.5 meters), the Current Depth display will be restored, however Max Depth will only display 'oor' for the remainder of that dive. The Log for that dive will also only indicate 'oor' as the Max Depth achieved.

Fig. 72 - Delayed Violation (>330 ft / 99.5 m)

WARNING: The expanded capabilities of the 500AI are provided as safety features to assist you with emergency situations. Special training, equipment, and support are necessary for diving deeper than the maximum recommended sport diving depth limit of 130 feet (39 meters).

IMMEDIATE VIOLATION MODE AND GAUGE MODE

WARNING: The 500AI enters Immediate Violation Mode when a situation totally exceeds its capacity to predict an ascent procedure. These dives represent gross excursions into decompression that are beyond the boundaries and spirit of the 500AI design, and a 500AI should not be used for the dives.

During the Dive

If a ceiling *much greater* than 60FT (18M) is required, an Immediate Violation Mode will be entered (Fig. 73). This situation would be preceded by entering Delayed Violation Mode, previously described on page 62. The 500AI would then operate with limited functions in **Gauge Mode** during the remainder of that dive and for 24 hours after surfacing.

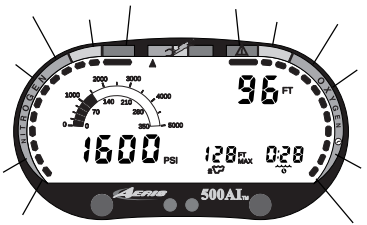


Fig. 73 - Immediate Violation and Gauge Mode (underwater)

Gauge Mode turns the 500AI into a digital instrument without any decompression or oxygen monitoring functions. Only Current Depth, Max Depth, Elapsed Dive Time, Tank Pressure (digital and Bar Graph), and the Ascent Rate Indicator will be displayed, and the Nitrogen Bar Graph and O2 Bar Graph will flash as a warning of this condition (Fig. 73).

To view Temperature and Time of Day, press the Advance (Left) button. To activate the Backlight, press the Select (Right) button.

After the Dive

The 500AI will also enter an **Immediate Violation Mode** five minutes after reaching the surface from a dive in which a Delayed Violation occurred.

On the surface, **Gauge Mode** displays the Dive Number, Surface Interval, and Tank Pressure (digital and Bar Graph). It does not provide the FO2, Planning Sequence, or Time to Fly and Desaturate features (Fig. 74).

The countdown timer that appears when you try to access Time to Fly does not represent 'Time to Fly'. It is only provided to inform you of the time remaining before normal 500AI operation can resume with full features and functions.

To view Temperature/Time/Date, press the Advance (Left) button. To activate the Backlight, press the Select (Right) button.

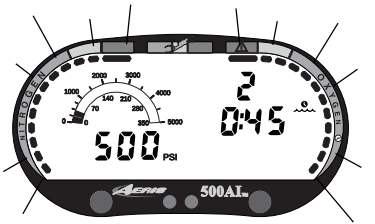


Fig. 74 - Immediate Violation and Gauge Mode (on the surface)

PERMANENT VIOLATION

Entering the Immediate Violation Mode, then Gauge Mode, will result in loss of all 500AI decompression and oxygen monitoring functions for 24 hours after that dive. **This condition is considered a Permanent Violation, and in the event that a dive is made during the 24 hour period, a full 24 hour surface interval must then be served before all functions are restored.**

OXYGEN EXPOSURE

The 500AI is a sophisticated instrument designed with capabilities that go beyond the range of recreational diving with compressed air. It will help you to avoid and manage excessive oxygen exposure.

PARTIAL PRESSURE OF OXYGEN

As depth increases during the dive, the partial pressure of oxygen (PO2) increases. As you approach the maximum depth allowed for the FO2 value set for the dive, the 500AI will alert you and display the PO2 value while you reduce your level of PO2 according to your specialized nitrox training.

High PO2 Dive Mode

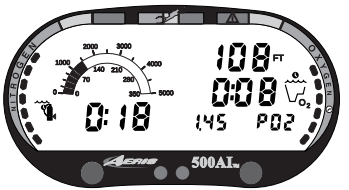


Fig. 75 - High PO2 Warning

The 500AI enters the High PO2 Dive Mode when the partial pressure of oxygen becomes equal to, or greater than, **1.40 ATA**. A double beep is emitted and the current PO2 value and symbol PO2 will appear and remain on display until the level of PO2 decreases below a value of 1.40 ATA (Fig. 75).

If partial pressure of oxygen continues to increase, the value of PO2 displayed will increase from 1.40 toward a maximum value of 5.00 ATA in increments of '.01' ATA.

When PO2 reaches a value of **1.60 ATA**, the Audible Alarm will emit a double beep then one beep per second* as a warning until the level of PO2 decreases below 1.60 ATA. Also, the large red segment of the O2 bar graph, the PO2 value, and PO2 symbol will flash continuously (Fig. 76).

*If the Audible Alarm feature was set to OFF, only a double beep.

WARNING: In the event that you enter High PO2 Dive Mode, you must immediately focus on reducing the partial pressure of oxygen by slowly ascending to a shallower depth at a safe rate in accordance with your nitrox training. If you continue the dive at your current depth, or descend deeper, your exposure to CNS oxygen toxicity will increase.

HIGH OXYGEN ACCUMULATION

It is important that you understand that conducting repetitive dives using enriched nitrogen-oxygen (nitrox) mixtures can lead to oxygen buildup, reducing oxygen tolerance while increasing the risk of pulmonary oxygen toxicity.

AERIS strongly recommends that you avoid exceeding oxygen exposure limits, and reminds you that nitrox diving requires special training and understanding of the effects of oxygen toxicity.

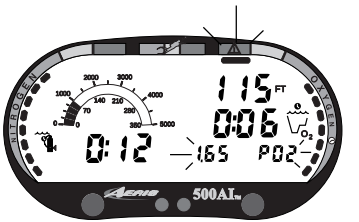


Fig. 76 - High PO2 Alarm

The O2 Bar Graph provides you with a convenient graphic representation of your oxygen accumulation, displaying either oxygen accumulated during that dive, or during the repetitive dives you conduct during that 24 hour period, whichever of the two is greater at that time.

The yellow Caution Zone of the O2 Bar Graph offers you a convenient way to consistently monitor how close you are coming to the limits of oxygen tolerance. **Use it as a visual reference to place a wider margin of protection between you and the Limits.**

If the theoretical amount of oxygen accumulated equals, or exceeds, the limit for a single exposure, or the exposure limit for a 24 hour period, Oxygen Dive Time Remaining becomes zero (0:00) and the O2 Bar Graph will enter the red danger zone (Fig. 77). The full O2 Bar Graph will flash and the Audible Alarm will emit one beep per second* as a warning until the level of oxygen decreases below the limit.

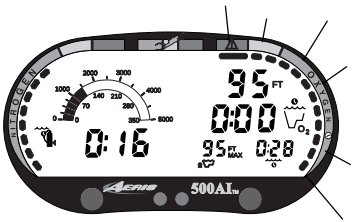


Fig. 77 - High O2 Alarm

*If the Audible Alarm feature was set to OFF, only a double beep.

You must immediately focus on making **a safe controlled ascent** to the surface to prevent further exposure. As your accumulation (dose) decreases during your surface interval, the O2 bar graph will gradually recede into the yellow (caution) zone and green (normal) zone.

WARNING: In the event that you exceed the maximum per dive allowable oxygen exposure (dose), it is recommended that you allow a surface interval of at least 2 hours before reentering the water. If you exceed the maximum 24 hour period allowable oxygen exposure (dose), you must allow a surface interval of at least 24 hours before reentering the water.

AERIS suggests always leaving the water with the O2 Bar Graph in the green (normal) zone.

UNEXPECTED LOSS OF DISPLAYED INFORMATION

If your 500AI stops working for any reason, it is important that you have anticipated this possibility and are prepared for it. **This is an important reason for not pushing the no decompression and oxygen accumulation limits, and a critical reason to avoid entering decompression.**

If you dive in situations where your trip would be ruined or your safety would be jeopardized by losing the use of your 500AI, an analog or digital backup system or use of standard air (or nitrox) tables is highly recommended.

Be a -
RESPONSIBLE DIVER
at all times.

⚠ ADDITIONAL WARNINGS and SAFETY RECOMMENDATIONS

- **There are few legitimate excuses for making unplanned Decompression dives, and the consequences of this type of diving can be severe. By making an unplanned Decompression dive without the necessary preparation and training, you will have placed yourself in an unnecessarily dangerous situation. Allow a surface interval of at least 24 hours before reentering the water in the event a dive requires emergency decompression.**

- **By entering decompression, you automatically impose a "ceiling" above you which you cannot immediately ascend beyond, denying you free access to the surface.**

- **Exiting the water with the Nitrogen Bar Graph in the red decompression zone greatly increases the risk of decompression sickness, and may result in injury or death.**

- **Existing data for making planned decompression dives is extremely limited, and virtually nonexistent for repetitive decompression diving. Decompression diving greatly increases your risk of decompression sickness.**

- **Decompression diving, or diving deeper than 130 feet (39 m), will greatly increase your risk of decompression sickness.**

- **AERIS does not advocate diving to depths below 130 feet (39 meters), the basis for which is purely theoretical.**

⚠ ADDITIONAL WARNINGS and SAFETY RECOMMENDATIONS

- **Maximum limits for exposure to oxygen should not be exceeded, and the consequences of CNS (Central Nervous System) oxygen toxicity can be severe, resulting in Gran Mal convulsions and drowning.**

- **Conducting repetitive dives using enriched nitrogen-oxygen mixtures can lead to oxygen buildup, reducing oxygen tolerance while increasing the risk of pulmonary oxygen toxicity.**

- **The oxygen features of the 500AI are intended for use only by recreational divers trained for nitrox diving by an instructor certified by a recognized training agency to teach diving with nitrox.**

- **Allowing the O2 Bar Graph to enter the red (Danger) zone greatly increases the risk of CNS oxygen toxicity, and may result in serious injury or death.**

- **It should not be considered that the capabilities built into the 500AI provide any implied approval or consent from AERIS for individuals to exceed the defined limits of recreational dive profiles, as agreed on by all internationally recognized training agencies.**

- **The 500AI is not intended for use by military or commercial divers.**

SUMMARY OF EXTREME DIVE MODES

WARNING: Avoid the extremes and make all ascents safely and controlled.

Modes	REASON	ACTION
Decompression	NDL exceeded	Decompress at Stop Depth indicated until it changes
Conditional Violation	above ceiling	Descend below Stop Depth indicated and decompress
Delayed Violation	> 5 min above ceiling	Descend below Stop Depth indicated and decompress
	60-70 FT (18-21 M) ceiling	Decompress at 60 FT (18 M) Stop Depth until it changes
	> 330 ft (99.5 m) depth	Ascend to within recreational limits
Immediate Violation and Gauge Mode	much > 60 FT (18 M) ceiling	No prediction available, only depth and elapsed time
	surfaced during delayed viola	No prediction available, only depth and elapsed time
High PO2	> 1.40 ATA PO2	Ascend to shallower depth, reduce PO2 level
High O2	> per dive O2 limit	Ascend to surface until O2BG in 'green'
	> 24 hr O2 limit	Ascend to surface until O2BG in 'green'

CARE and MAINTENANCE

CARE AND CLEANING

The 500AI is a sensitive electronic instrument. Although it has been designed to withstand the rigors of diving, it still must be handled carefully to protect it from shock, excessive heat, chemical attack, and tampering. Protect the lens against scratches with a transparent Instrument Lens Protector. Small scratches will naturally disappear underwater.

CAUTION: Never spray aerosols of any kind on, or near, the 500AI. The propellants may chemically attack the plastic.

AFTER THE DIVE

Soak and rinse the 500AI in fresh water following each dive, and check the low pressure sensor guard cap to ensure that it is free of any debris or obstructions. Use lukewarm water or a slightly acidic white vinegar/water bath to dissolve any salt crystals. After removal from the bath, place the 500AI under gently running fresh water and towel dry before storing. Transport your 500AI cool, dry, and protected.

WARNING: Never poke any object through any slots or holes of the 500AI. Doing so may damage the depth sensor, possibly resulting in erroneous depth and/or dive time remaining displays.

ANNUAL INSPECTIONS AND SERVICE

Your 500AI should be inspected annually by an Authorized AERIS Dealer who will perform a factory prescribed function check and inspection for damage or wear. To keep the 2 year limited warranty in effect, this inspection must be completed one year after purchase (+/- 30 days). AERIS recommends that you continue to have this inspection performed every year to ensure your 500AI is working properly. A convenient service record is provided in the rear of this owner's guide which should be signed by the service technician after each annual inspection or factory service. The cost of annual inspections are not covered under the terms of the 2 year limited warranty.

WARNING: If you are in doubt about the accuracy of your 500AI's depth readings, DO NOT attempt to dive with it until it has been inspected by AERIS Customer Service.

It is possible to damage the 500AI depth sensor if it is not pressure tested properly. Please take heed of the following warning:

WARNING: Never pressure test the 500AI in an air environment. Doing so may damage the depth sensor; possibly resulting in erroneous depth or time readings.

HOW TO OBTAIN SERVICE

Take your 500AI to an Authorized AERIS Dealer or send it to the nearest AERIS Regional Distributor Facility.

To return your 500AI to AERIS:

- Record all dive data in the Log and/or download the data in memory. All data will be erased when it receives factory service.
- Remove the 500AI with the HP hose from the regulator.
- Send only the 500AI with hose (do no attempt to remove the hose).
- Package it using a protective cushioning material.
- Include a legible note stating the specific reason for return, your name, address, daytime phone number, serial number, and a copy of your original sales receipt and Warranty.
- Send prepaid and insured to the nearest AERIS service facility.
- Non-warranty service must also be prepaid (call for an estimate).
- If you have any questions regarding 500AI service, call AERIS Customer Service at (510) 346-0010, 8 to 5 PST, or E-MAIL: info@diveaeris.com.

NOTE: Annual 'inspections' are performed only by Authorized AERIS Dealers and are not performed by the factory.

BATTERY LIFE

Battery consumption rate varies throughout periods of operation, which begin upon activation and continue for 24 hours after surfacing from a dive. The exact number of dives, or hours of operation, that you will obtain with a battery is subject to variables such as the number of dives conducted during an operational period, temperature, and the frequency and duration of backlight use.

Tests and calculations indicate that a new Tadiran® 1/2AA model TL-2150, .95Ahr, 1.0 ma, Lithium battery will maintain unit operation for approximately 300 dive hours (if 1 - 1 hour dive per dive day) to over 600 dive hours (if 2 or more 1 hour dives per dive day). Yearly replacement is recommended.

NOTE: The disposable battery supplied with the 500AI is not covered by the limited 2 year warranty.

LOW BATTERY CONDITION

During unit operation, voltage level is checked every 10 minutes. A Low Battery condition is indicated by the Battery icon appearing on the display (Fig. 78a). Upon decreasing to a voltage level that will not maintain proper unit operation, the icon will flash for 5 seconds followed by shutdown of the unit. The Backlight will not operate during a Low Battery Condition.

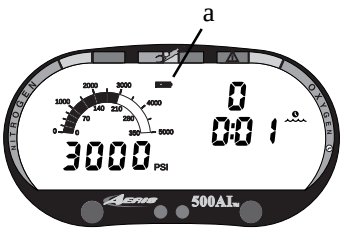


Fig. 78 - Low Battery

If the unit did not display the Low Battery icon 'prior' to entering the Dive Mode, and a low battery condition occurs during a dive, you will be alerted by the Low Battery icon appearing on the display. There will be sufficient battery power to maintain unit operation 'for the remainder of that dive'.

NOTE: The 500AI will continue to function on real time for a period of 10 seconds after the battery is removed, maintaining Nitrogen and Oxygen calculations for a repetitive dive. By having a new battery ready to insert prior to removing the battery hatch and the battery that's in the unit, you can take advantage of this enhanced feature.

CAUTION: If the new battery is not inserted within 10 seconds after removal of the battery that's in the unit, you must wait for a minimum of 2 minutes prior to inserting the new battery. Otherwise, the unit may enter Dive Mode, perform a quick dive while on the surface, log the dive, then resume normal operation. Also, Nitrogen and Oxygen calculations will be erased and Date and Time will have to be reset.

Therefore, to retain calculated data for repetitive dives, the battery must be replaced in less than 10 seconds!

BATTERY REPLACEMENT

NOTE: The following procedure must be closely adhered to. Damage due to improper battery replacement is not covered by the limited 2 year warranty.

PRELIMINARIES

- **Purge the regulator system of all pressure.**
- It is not necessary to remove the HP hose from the regulator or the 500AI from the HP hose. However, if the 500AI is fitted with a Quick Disconnect, disconnect it to allow removal of the boot.
- Remove the two screws that secure the Logo Bar, or Compass Assembly, to the top of the 500AI housing (Fig. 79a) by turning them counter clockwise with a 3/32" hex wrench, then lift the logo bar, or compass assembly, up and off the top of the housing.

BOOT REMOVAL

- Grasp the 500AI with both hands, palms on front sides, fingers on the rear of the console, and thumbs to the left and right of the top center.
- Carefully push the top of the boot over the tabs on top of the module while pressing from behind with your fingers.
- Slide the boot down (but not off) the hose, or off the Quick Disconnect.

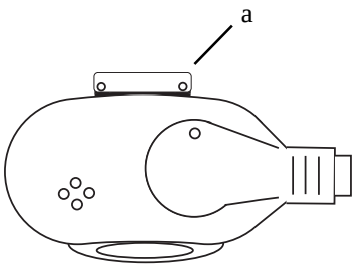


Fig. 79 - Logo Bar Removal

BATTERY REMOVAL

The battery compartment should only be opened in a dry and clean environment, with extreme care taken to prevent the entrance of moisture or dust.

Examine the case back to find the Battery Hatch (Fig. 80a):

- Remove the three screws that secure the battery hatch to the housing by turning them counter clockwise with a small Philips head screwdriver.
- Lift the hatch up and off of the housing.
- Lift the battery, positive (+) end first, out of the battery compartment.
- Remove the battery hatch o-ring and inspect it for any signs of deterioration or deformity. DO NOT use tools to remove the o-ring.
- O-ring replacement is highly recommended to ensure proper sealing.
- Closely check the battery hatch and the housing sealing surfaces for any signs of damage that might impair proper sealing. If found, return your 500AI to your Authorized AERIS Dealer, and DO NOT attempt to use it until it has received factory service.
- Closely examine the inside of the battery compartment for any signs of corrosion indicating entrance of moisture into the unit. If found, return your 500AI to an Authorized AERIS Dealer, and DO NOT use it until it has received service.

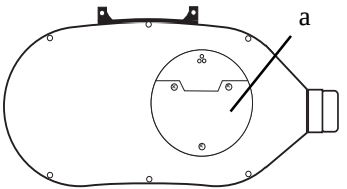


Fig. 80 - Case Back

If water or corrosion is found in the battery compartment, it is best to have your unit inspected and cleaned by an Authorized AERIS Dealer Service Technician. If you are cleaning the unit -

- Inspect the lens and case to ensure they are not cracked or damaged.
- Discard the battery and DO NOT attempt to reuse it.
- Check the o-ring seating surfaces for damage (nicks, cuts, divots, etc.).
- Flush the battery hatch and compartment with a solution of 50% white vinegar and 50% water. Rinse with fresh water, and allow to air dry overnight or blow dry with a hair dryer set at 'no heat'.

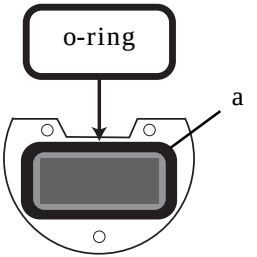


Fig. 81 - O-ring Installation

BATTERY INSTALLATION

- To replace the battery hatch o-ring, lightly lubricate it with silicon grease and place it in the groove of the battery hatch (Fig. 81a). Ensure that it is evenly seated.

NOTE: This o-ring must be a genuine AERIS part that can be purchased from your Authorized AERIS Dealer. Use of any other o-ring will void the warranty.

- Place a new 3.6 volt TADIRAN®, model TL-2150, .95Ah, 1.0ma, Lithium battery, negative end first, into the battery compartment, ensuring proper orientation of the positive (+) and negative (-) ends (Fig. 82).

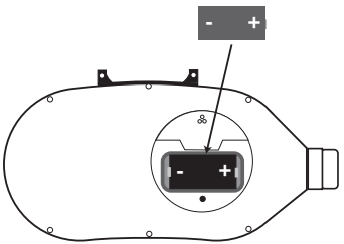
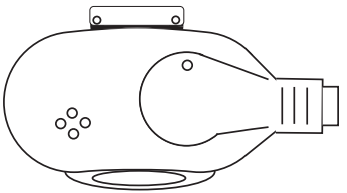


Fig. 82 - Battery Orientation/Installation

- Carefully place the battery hatch with o-ring into position so that it seats on top of the raised flange located around the opening of the battery compartment, and while holding it in place with your finger, secure it with the three screws by turning them clockwise with a small Philips head screwdriver. DO NOT attempt to use any other screws.
- Carefully tighten the screws until secure by *alternately* turning them each one turn at a time. DO NOT overtighten.

INSPECTION



- Activate the unit and watch carefully as it performs a full diagnostic and battery check and enters Surface Mode.
- Observe the LCD display to ensure it is consistently clear and sharp in contrast throughout the screen.
- If any portions of the display are missing or appear dim, or if a Low Battery condition is indicated, return the unit to your Authorized AERIS Dealer for a complete evaluation before attempting to use it.

REASSEMBLY

- Reinsert the module into the rubber boot using care when pulling it over the tabs on top of the housing.
- Secure the Logo Bar, or Compass Assembly with the two screws by turning them clockwise using a 3/32" hex wrench. DO NOT overtighten.

REFERENCE

DECOMPRESSION MODEL

The decompression model used by the 500AI is based on the no decompression multilevel repetitive dive schedules successfully tested by Dr. Ray Rogers and Dr. Michael Powell. These tests did not include repetitive dives deeper than 90 feet (27 m) or decompression dives. Due to the present unavailability of statistical data, 500AI decompression predictions are based on U.S. Navy theory.

MULTIPLE TISSUE TRACKING

The 500AI tracks twelve tissue compartments with halftimes ranging from 5 to 480 minutes. The Nitrogen Bar Graph always displays the controlling compartment that is the only one important at that time. Think of the Nitrogen Bar Graph as twelve separate transparent displays laid on top of one another (Fig. 83). The tissue compartment that has filled up fastest is the only one the viewer can see from the top.

At any particular point, one tissue compartment may be absorbing nitrogen, while another that was previously higher may be off-gassing. Figure 84 illustrates the point at which one compartment “hands over” control to another compartment at a different depth. This feature of the Decompression Model is the basis of multilevel diving, one of the most important contributions the 500AI offers you.

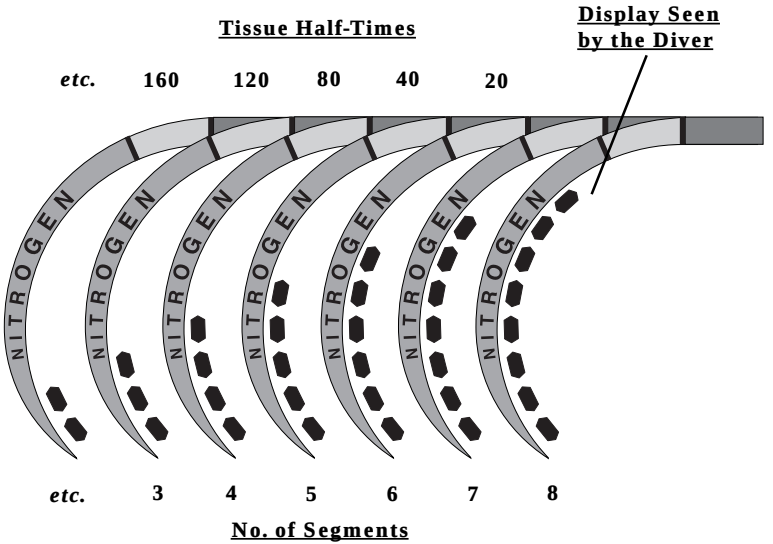


Fig. 83 - Tissue Compartment Control

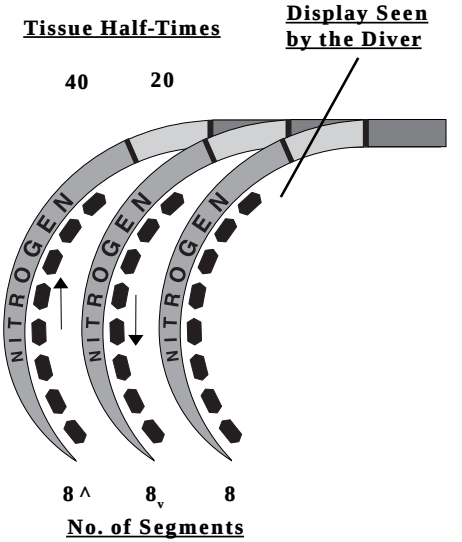


Fig. 84 - Tissue Compartment Control Hand-Over

Depth feet (meters)		500AI NDL-mins. Eng (Metric)		U.S.N. NDL mins.
30	(9)	260	(283)	- - -
35		- - -	- - -	310
40	(12)	137	(144)	200
50	(15)	80	(84)	100
60	(18)	57	(58)	60
70	(21)	40	(41)	50
80	(24)	30	(31)	40
90	(27)	24	(26)	30
100	(30)	19	(20)	25
110	(33)	16	(16)	20
120	(36)	13	(13)	15
130	(39)	10	(11)	10
140	(42)	9	(9)	10
150	(45)	8	(8)	5
160	(48)	7	(7)	5
170	(51)	*	*	5
180	(54)	*	*	5
190	(57)	*	*	5

[* The 500AI will not scroll past 160 feet (48 meters), or when projected bottom /descent time is less than one minute.]

Fig. 85 - No Decompression Limits

NO DECOMPRESSION LIMITS

Note how the No Decompression Limits for the 500AI are contrasted with the U.S. Navy limits (Fig. 85). For most depths, the 500AI provides somewhat less no decompression times than the U.S. Navy Tables. However, while the No Decompression Limits may be less, you will receive greatly increased allowable bottom times as you take advantage of the multilevel dive capabilities offered by the 500AI. Notice also that the 500AI Planning Sequence does not scroll past 160 feet (48 meters).

WARNING: Using the 500AI, just as using the U.S. Navy (or other) No Decompression Tables, is no guarantee of avoiding decompression sickness, i.e. “the bends.”

WARNING: AERIS advocates responsible diving practices and does not recommend decompression diving, or diving below 130 feet (39 meters). The decompression capabilities of the 500AI are intended strictly for emergency use. Decompression diving is inherently hazardous and greatly increases your risk of decompression sickness - even when performed according to the computer's calculations. In the event that you must make an emergency decompression dive, you must not make another dive for at least 24 hours.

OXYGEN EXPOSURE LIMITS

Predicted exposure limits and oxygen calculations of the 500AI are based on maximum exposure durations published by the National Oceanic and Atmospheric Administration in the October 1991 NOAA Diving Manual (Fig. 86).

Both central nervous system (CNS) oxygen toxicity and pulmonary oxygen toxicity were taken into consideration when the limits were published by NOAA.

Although CNS oxygen toxicity is considered the primary constraint for higher levels of PO2, there are circumstances in which pulmonary oxygen toxicity can limit exposures.

CNS oxygen toxicity is not considered likely at PO2 levels below 1.30 ATA. It is however related to the diver's work level. Performing strenuous tasks could cause the symptoms of oxygen poisoning to occur at PO2 levels lower than they normally would appear during casual recreational diving.

The nitrox features of the 500AI are intended for use only by recreational divers trained for nitrox diving by an instructor certified by a recognized training agency to teach diving with nitrox.

PO2 (ATA)	Maximum Exposure Time Per Dive (Min)	Maximum Exposure Time Per 24hr (Min)
0.60	720	720
0.70	570	570
0.80	450	450
0.90	360	360
1.00	300	300
1.10	240	270
1.20	210	240
1.30	180	210
1.40	150	180
1.50	120	180
1.60	45	150

Fig. 86 - Oxygen Exposure Limits

WARNING: Diving with enriched nitrogen-oxygen (nitrox) mixtures requires special knowledge of the variations imposed upon divers, their activities, and their equipment by the increased percentage of oxygen. AERIS recommends completion of a specialized Nitrox training course by a recognized training agency prior to diving with any enriched nitrogen-oxygen (nitrox) mixtures.

WARNING: In the event that you exceed the maximum limit of per dive allowable oxygen exposure, it is recommended that you allow a surface interval of at least 2 hours before reentering the water. If you exceed the maximum limit of 24 hour period allowable oxygen exposure, you should allow a surface interval of at least 24 hours before reentering the water.

ALTITUDE DIVING

Diving at high altitude requires special knowledge of the variations imposed upon divers, their activities, and their equipment by the decrease in atmospheric pressures. AERIS recommends completion of a specialized Altitude training course by a recognized training agency prior to diving in high altitude lakes or rivers.

Atmospheric pressure decreases as altitude increases above sea level. Weather systems and ambient temperature also affect barometric pressures. Consequently, depth reading instruments that do not compensate for the decrease in pressure indicate depth readings shallower than the depth they are actually at.

The 500AI automatically compensates for decreased ambient pressure when activated at high altitudes up to 14,000 feet (4,267 meters). Its program contains a high altitude algorithm that reduces no decompression and oxygen exposure limits to add a larger zone of caution.

Whenever the 500AI is manually activated at altitudes higher than 2,000 feet (610 meters), it will automatically recalibrate itself to measure depth in feet of fresh water rather than feet of sea water. Therefore, when returning to lower altitudes, diving should not be conducted until the 500AI automatically clears of any residual nitrogen and oxygen loading and resets to operate at the new altitude.

WARNING: Altitude compensation provided by the 500AI takes place when the unit is activated. DO NOT dive at any different altitude until the 500AI shuts off. It will automatically recalibrate when reactivated at the new altitude.

FLYING AFTER DIVING

In 1990 the Undersea and Hyperbaric Medical Society (UHMS) published a set of guidelines aimed at minimizing the possibility of decompression sickness due to flying too soon after diving. The UHMS suggests* divers using standard air cylinders and exhibiting no symptoms of decompression sickness wait 24 hours after their last dive to fly in aircraft with cabin pressures up to 8,000 feet (2,440 meters).

* excerpted from "The UHMS Flying After Diving Workshop"

The two exceptions to this recommendation are:

- If a diver had less than 2 hours total accumulated dive time in the last 48 hours, then a 12 hour surface interval before flying is recommended.
- Following any dive that required a decompression stop, flying should be delayed for at least 24 hours, and if possible, for 48 hours.

Since the 1990 UHMS guidelines were introduced, data from the Diver's Alert Network (DAN) was introduced that resulted in DAN's position** that "A minimum surface interval of only 12 hours would be required in order to be reasonably assured a diver will remain symptom free upon ascent to altitude in a commercial jet airliner (altitude up to 8,000 feet/2,440 meters). Divers who plan to make daily, multiple dives for several days, or make dives that require decompression stops, should take special precautions and wait for an extended surface interval beyond 12 hours before flight".

** excerpted from "DAN's Current Position on Recreational Flying After Diving"

Both the UHMS and DAN agree that "There can never be a flying after diving rule that is guaranteed to prevent decompression sickness completely. Rather, there can be a guideline that represents the best estimate for a conservative . . . surface interval for the vast majority of divers. There will always be an occasional diver whose physiological makeup or special diving circumstances will result in the bends".

To reduce the risk of developing decompression sickness after a single no decompression dive, current guidelines suggest waiting 12 hours prior to exposure to atmospheric pressures equivalent to 1,000 feet (330 meters) above sea level, or greater. When repetitive dives are conducted during the same day, or period of days, it is suggested that the interval be increased to a minimum of 24 hours. Note that land travel to higher elevations after diving must also be considered as an exposure to altitude.

Be a -
RESPONSIBLE DIVER
at all times.

SPECIFICATIONS

NO DECOMPRESSION MODEL

Basis:
- Modified Haldanean Algorithm
- 12 tissue compartments

Data Base:
- Diving Science and Technology (DSAT) - Rogers/Powell

Performance:
- Tissue compartment halftimes (in mins.) Spencer's "M" values
  5, 10, 20, 40, 80, 120, 160, 200, 240, 320, 400, 480
- Reciprocal subsurface elimination
- 60 minute surface credit control for compartments faster than 60 minutes
- Tissue compartments tracked up to 24 hours after last dive

Decompression Capabilities:
- Decompression ceilings at 10, 20, 30, 40, 50, & 60 feet
  (3, 6, 9, 12, 15, & 18 meters)

Altitude Algorithm:
- Based on NOAA tables

Oxygen Tolerance Limits:
- Based on NOAA tables

OPERATIONAL MODES

Modes:
- Activation/Diagnostic
- Surface
- Temperature/Time/Date
- FO2 Set
- Time to Fly & Desaturate
- Plan
- Log
- Backlight
- Set -
  - FO2 50% Default (on/off)
  - Audible Alarm (on/off)
  - Depth Alarm
  - Turn Pressure Alarm
  - End Pressure Alarm
  - Unit of Measure (imperial / metric)
  - Date (month, day, year)
  - Time (hour format, hour, minute)
  - Sampling Rate
- EA (External Access)
- No Decompression Dive
- Alternate No Decompression Dive
- Decompression Dive
- Alternate Decompression Dive
- Violation (conditional, delayed, & immediate/gauge)
- High PO2 Level
- High Oxygen Accumulation

SPECIFICATIONS (continued)

DISPLAY RANGE/RESOLUTION

Numeric Displays:

	Range:	Resolution:
• Dive Number	0 - 9	1
• Depth	0 - 330 ft (0 - 99.5 m)	1 ft (.5 m)
• Maximum Depth	330 ft (99.5 m)	1 ft (.5 m)
• FO2 Set Point	21 - 50 %	1 %
• PO2 Value	.01 - 5.00 ATA	.01 ATA
• Dive Time Remaining	0 - 9 hr. 59 min.	1 minute
• Gas Time Remaining	0 - 9 hr. 59 min.	1 minute
• No Decompression Time	0 - 9 hr. 59 min.	1 minute
• Decompression Stop Time	0 - 99 min.	1 minute
• Total Ascent Time	0 - 9 hr. 59 min.	1 minute
• Elapsed Dive Time	0 - 1 hr. 59 min.	1 minute
• Surface Time	0 - 23 hr. 59 min.	1 minute
• Dive Log Surface Interval	0 - 23 hr. 59 min.	1 minute
• Time to Fly	23 hr. 50 min. - 0* (* starting 10 min. after the dive)	1 minute
• Time to Desaturate	9 hr. 59 min. - 0* (* starting 10 min. after the dive)	1 minute
• Cylinder Pressure	0 - 5000 psi (0 - 352 BAR)	10 psi (.5 BAR)
• Temperature	0 to 99°F (-9 to 60°C)	1°

Special Displays	Occurrence
• Out of Range	>330 feet (>99.5 meters)
• Gauge Mode Countdown Timer	12 - 24 hours (after violation)

BAR GRAPHS

Nitrogen Bar Graph

	segments
No Decompression zone (green)	9
No Deco Caution zone (yellow)	2
Decompression Warning zone (red)	1

Oxygen Accumulation (O2) Bar Graph

	segments
Normal zone (green)	9
Caution zone (yellow)	2
Danger zone (red)	1

Ascent Rate Indicator

	segments	feet/min.	meters/min.
	0	0 - 20	0 - 6
Normal zone (green)	1	21 - 30	6.5 - 9
	2	31 - 40	9.5 - 12
Caution zone (yellow)	3	41 - 50	12.5 - 15
	4	51 - 60	15.5 - 18
Too Fast zone (red flashing)	5	61 +	18.5 +

Tank Pressure Bar Graph

Range	segments	pressure/segment
0 - 1000 PSI (0 - 70 BAR)	4	250 PSI (17.5 BAR)
1000 - 5000 PSI (70 - 350 BAR)	8	500 PSI (35 BAR)

SPECIFICATIONS (continued)

OPERATIONAL PERFORMANCE

Function	Accuracy
• Depth	± 1% of full scale
• Cylinder Pressure	± 1% of full scale
• Timers	1 second per day

Dive Counter
- Displays Dives #0, 1, 2, 3, 4, 5, 6, 7, 8, 9 (continues to #0 to #9)
- Displays #0 for dives #10, 20, etc.
- Resets to Dive #1 upon diving after midnight (new date)

Dive Log Mode
- Stores 12 most recent dives in memory for viewing
- After 12 dives, adds 13th dive in memory and deletes the first dive

Altitude
- Operational from sea level to 14,000 feet (4,267 meters) elevation
- Recalibration of depth readings from 'feet of sea water' to 'feet of fresh water' when higher than 2,000 feet (610 meters) elevation

Power

• Battery	1 - 1/2AA, TADIRAN® model TL-2150 Lithium (must be rated 3.6 volt, .95Ah, 1.0 ma)
• Shelf life	Up to 10 years
• Replacement	User replaceable (annual recommended)
• Life expectancy	300 dive hours (if 1 - 1 hour dive per dive day) to over 600 dive hours (if 2 or more 1 hour dives per dive day)

Activation:
- Manual (push button) - cannot be activated by water immersion.
- Cannot be activated deeper than 4 feet (1.5 m).
- Cannot be activated at elevations higher than 14,000 feet (4,267 m).
- Needed before first dive of an activation period.
- Automatically shuts unit off if dive is made within 120 minutes after initial activation. Reactivation required.
- Cannot be shut off manually.

Setting FO2:
- Automatically set for 'Air' upon activation.
- Remains set for Air unless set for a numerical value.
- Set point numerical values of 21 to 50%.
- If set at 21%, it remains set at 21% until changed.
- If set at 22 to 50%, the setting reverts to 50% after a dive if the FO2 Default is On. If the FO2 Default is Off, the value will remain at the value set.

ACCESSORIES

Optional items available from your Authorized AERIS Dealer:
- Quick Disconnect - for removal of the console from HP hose
- Compass - attaches to top of console
- Transit Clip - retractor for attachment to BC d-ring
- Battery Kit - includes 1 battery, 1 o-ring, lubricant
- Lens Protector - adheres to lens, prevents scratches
- Dive Downloader - hardware and software package to download data from memory to a PC data/profile program

GLOSSARY

The following are diving terms to become familiar with. Some apply specifically to the 500AI.

Air Dive - A dive conducted using air (approximately 21% oxygen & 79% nitrogen) as the breathing gas.
Algorithm - A step-by-step mathematical formula designed to accomplish a particular result (i.e. Dive Time Remaining in the 500AI).
Altitude Dive - A dive made at an elevation above sea level (2,000+ ft. / 610+ m.) where a different set of no decompression tables is used .
Ascent Rate - The speed that a diver ascends toward the surface.
Ascent Rate Indicator - A display that shows ascent rate as a bar graph alongside a color–coded indicator.
Audible Alarm - A computer emitted tone that alerts the diver to potential danger.
Breathing Gas Time Remaining - A display of that shows the amount of time remaining based on a calculation of cylinder pressure, and the diver's breathing rate and depth.
Caution Zone - The yellow sections of the Bar Graphs that give a visual warning of a diver's proximity to limits.
Ceiling - See decompression ceiling.
Clean Dive - A dive preceded by 24 hours of no diving activity.
CNS - Abbreviation for the Central Nervous System of the body.
Competitive Dive - A dive conducted for profit or prize.
Compartment - A term applied to the hypothetical modeling of nitrogen absorption in the tissues (more accurate than the term "tissue" because dive computer models have no direct relation to human tissues).
CZ - Abbreviation for Caution Zone.
DCS - Abbreviation for decompression sickness, i.e., "the bends".
DECO - Abbreviation for Decompression.
Decompression Ceiling - The shallowest depth a diver may reach upon ascent without risking decompression sickness.

GLOSSARY (continued)

Decompression Stop - The depth(s) at which a diver must pause during ascent to allow absorbed nitrogen to escape naturally from the tissues.
Depth Sensor - an electro-mechanical device that converts water pressure into an electrical signal, that is converted to a visual depth display.
Diagnostic Mode - The first display seen on dive computers after initial activation during which time a self–check for internal faults is performed.
Display - A visual readout of information.
Dive Log Mode - A computer display of previous dive information.
Dive Time Remaining - A display of the time before a diver must surface based on no-decompression and oxygen accumulation status.
Elapsed Dive Time - The total time spent underwater during a dive between 5 feet (1.5 meters) on initial descent to 3 feet (1 meter) on final ascent.
FO2 - The fraction (percent / 100) of oxygen (O2) in the breathing gas mixture.
Icon - a small pictorial representation of an operational mode
Integrated Dive Computer - A dive computer that monitors and displays cylinder pressure in addition to no decompression information.
LCD - Abbreviation for liquid crystal display, an easily viewed low voltage display usually found on dive computers
Maximum Depth - The deepest depth attained during a dive.
Mode - A specific set of functions in a dive computer.
Multi-level Dive - A type of dive profile where the diver spends various times at different depths (opposite of a “Square Wave” dive profile).
Nitrogen Bar Graph - A graphic display of simulated nitrogen absorption on AERIS dive computers.
Nitrox - A nitrogen-oxygen breathing gas mixture that contains a higher fraction of oxygen than air.
Nitrox Dive - A dive conducted using nitrox (22 to 50 % O2) as the breathing gas.

GLOSSARY (continued)

No Deco - Abbreviation for No Decompression.
No Deco Time Remaining - The amount of dive time remaining based on no-decompression status.
No Decompression - Any part of a dive where the diver can surface without requiring a decompression stop.
O2 Bar Graph - A visual representation of oxygen accumulation on a dive computer display.
OTU - Abbreviation for oxygen tolerance unit. A Hamilton's Repex method term for oxygen dose.
Out of Range - The point at which a dive computer can no longer supply correct dive information.
Oxygen Tolerance - Dose or exposure to the physiological affects of elevated levels of oxygen.
Oxygen Toxicity - The adverse physiological affects of exposure to elevated levels of oxygen.
Partial Pressure - The proportion of the total pressure contributed by a single gas in a mixture of gases.
PO2 - Partial pressure of oxygen. The proportion of total pressure of a gas mixture contributed by oxygen.
Plan Sequence - A display of available dive times at 10 foot (3 meter) intervals from 30 to 160 feet (9 to 48 meters) used when dive planning.
Pressure Sensor - an electro-mechanical device that converts cylinder pressure into an electrical signal that the 500AI converts into cylinder pressure and breathing gas time remaining displays.
Repetitive Dive - Any dive that takes place within 12 hours of a previous dive.
Safety Stop - A depth at which a diver may choose, but is not required, to pause during ascent to allow absorbed nitrogen to escape naturally from the tissues.
Square Wave Dive - A type of dive profile where the entire dive is spent at one depth between descent and ascent.
Tissue - See Compartment.
Tissue Compartment - See Compartment.
Transducer - An electro-mechanical device in a dive computer that acts as a depth or pressure sensor.
Transition Period - The first 10 minutes of surface time after ascending above 3 feet (1 meter) from a dive.

500AI SERVICE RECORD

Serial Number _____

Date of purchase _____

Purchased from _____

Below to be filled in by an Authorized AERIS Dealer:

Date	Service Performed	Dealer / Technician

THE CODE OF THE RESPONSIBLE DIVER

AS A RESPONSIBLE DIVER I UNDERSTAND AND ASSUME THE RISKS I MAY ENCOUNTER WHILE DIVING.

RESPONSIBLE DIVING BEGINS WITH

- **DIVING WITHIN THE LIMITS OF MY ABILITY AND TRAINING**
- **EVALUATING THE CONDITIONS BEFORE EVERY DIVE AND MAKING SURE THEY FIT MY PERSONAL CAPABILITIES**
- **BEING FAMILIAR WITH AND CHECKING MY EQUIPMENT BEFORE AND DURING EVERY DIVE**
- **KNOWING MY BUDDY'S ABILITY LEVEL AS WELL AS MY OWN**
- **ACCEPTING THE RESPONSIBILITY FOR MY OWN SAFETY ON EVERY DIVE**

Be a -
RESPONSIBLE DIVER
at all times.

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